Tidewater Laboratory Services

Naval Medical Center, Portsmouth, VA

LABORATORY
DIRECTORY OF SERVICES
&
SPECIMEN COLLECTION MANUAL

Reviewed & Approved

L. Krevetski CAPT MC USN
Laboratory Dept. Head / Medical Director

SEPT 2015

LABORATORY DIRECTORY OF SERVICES
NAVAL MEDICAL CENTER
PORTSMOUTH, VA 23708

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K. Nguyen		**Updated & reformatted manual**	**Jan 2013**
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Samuel C. Weber		**Updated entire manual**	**July 2013**
Josephine C. Fajardo		**Added Coagulation Test Recommendations**	**June 2014**
Sarah A. Jenkins		**Added guidelines for Group B streptococcus screens for pregnant women**	**October 17, 2014**
K. Nguyen		**Updated CV from 45 minutes to 60 minutes, updated org chart**	**Nov 14**
Michelle O. Wallace		**Updated & reformatted manual**	**Aug 15**

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AN INTRODUCTION FROM THE LABORATORY

As the Laboratory Medicine Department, we are the first DoD/VA Laboratory System serving all TRICARE and VA eligible members in the Tidewater region using state-of-the-art business models and technology to provide the highest quality patient care.

This Directory of Laboratory Services is designed to give information to the user so that one may better understand laboratory operations, specimen requirements, and collection procedures. It is designed to be a ready reference should laboratory questions arise within the Medical Center or any of its Branch Health Clinics.

Knowledge, planning, and preparation are keys to collection and submission of laboratory specimens. The information contained in this manual will provide the foundation. Therefore, it is essential that all personnel read through this manual and review it frequently.

Lori Krevetski
CAPT, MC, USN
MEDICAL DIRECTOR, LABORATORY DEPARTMENT

INTRODUCTION

I. PURPOSE:

The information in this manual is designed to provide users with the current specimen collection policies and procedures of the Naval Medical Center, Portsmouth (NMCP) Laboratory Department. The Department Head/Medical Director reviews and approves all substantial changes to the specimen collection/handling policies and procedure manual before implementation. This manual is reviewed, revised and approved biennially (or whenever necessary) by the Department Head/Medical Director. All NMCP Laboratory personnel review this manual upon check-in or whenever revisions are made.

Note: NMCP includes the Charette Health Care Center and its Branch Health Clinics.

II. ORGANIZATION:

See the organizational chart on the following page. Laboratory Client Services is available to our hospital staff and patients for "one-stop shopping" assistance. To contact laboratory services during normal working hours, call 953-1621 or 953-6244. For Pathology issues contact at 953-1527. If after normal working hours, page 988-9306 for the senior tech on duty and immediate assistance will be provided. Laboratory Client Services will follow-up on the matter the next working day.

III. HOURS OF OPERATION:

A. The Laboratory is staffed 24 hours a day.

B. Regular duty hours with full staff are Monday through Friday, 0700 - 1530, except on holidays.

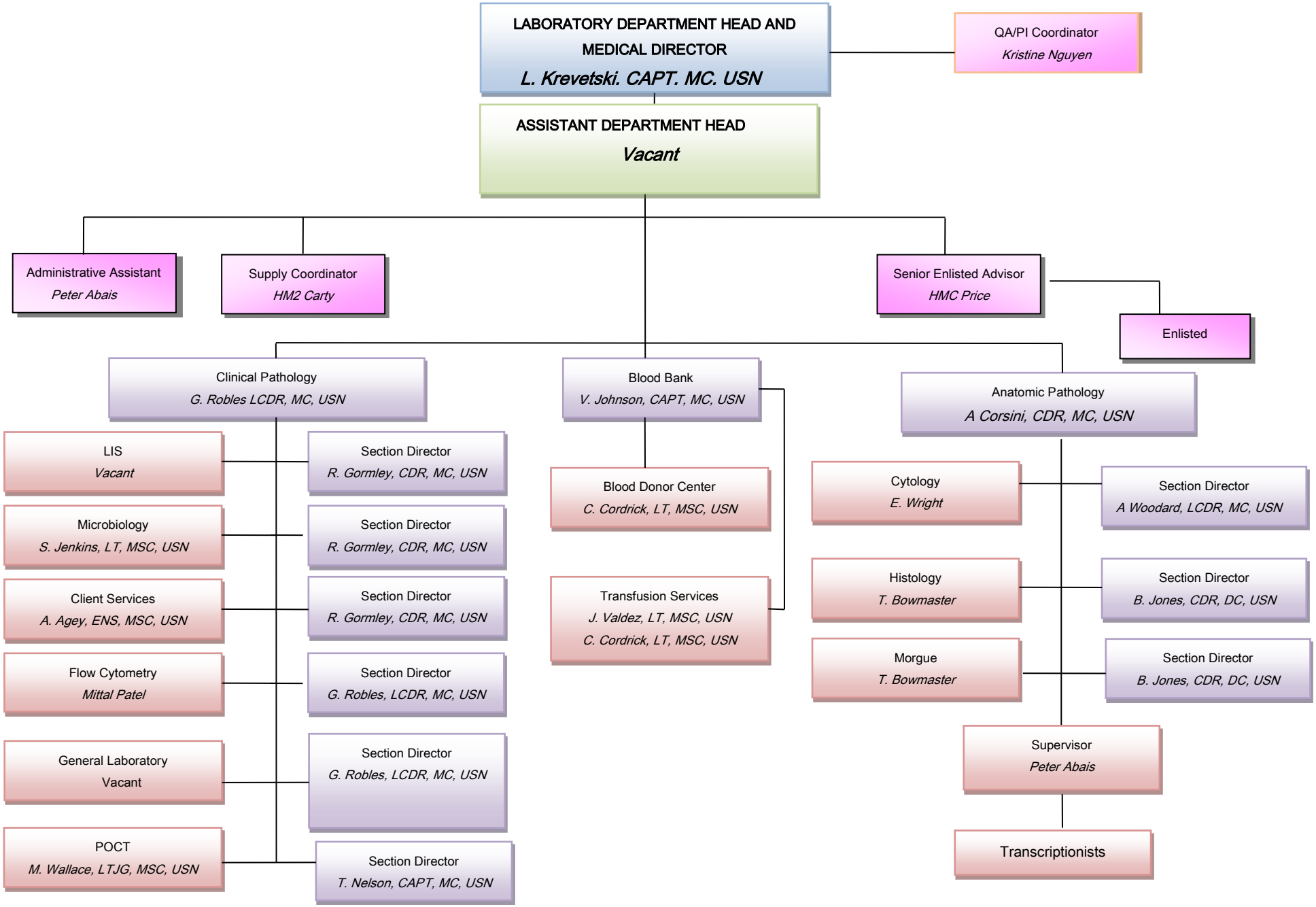
Note: Please be sure to make contact with a Laboratory Representative when dropping off a specimen.

C. Outpatient phlebotomy is performed in the Laboratory's Outpatient Phlebotomy section located on the first floor, North Mall of the Charette Health Care Center:

0630 - 1700 Monday through Friday
Closed on weekends and holidays.

D. A staff pathologist is available by pager 24 hours a day, 7 days a week at 988-9533. A senior enlisted technician is onboard 24 hours a day, 7 days a week, and can be reached at pager 988-9306.

NMCP LABORATORY ORGANIZATION CHART
AUG 2015



SPECIMEN SUBMISSION AND LABELING

I. PRINCIPLE:

The following procedure is provided to ensure the quality and proper identification of the specimen(s) presented to or collected by Laboratory Medicine.

II. PURPOSE:

To establish uniform procedures for requesting laboratory studies and handling laboratory specimens for all outlying Branch Health Clinics and Naval Medical Center Portsmouth.

III. PROCEDURE:

A. The following is the minimum information required on all request chits for submission of specimen(s) to the clinical pathology laboratory. Paper request chits will only be accepted from civilian providers, outlying areas that do not have CHCS capability or when CHCS is not functioning. All other requests for laboratory work MUST be requested via CHCS:

NOTE: If the patient is unable to understand the English language or is hearing impaired, please contact the OOD desk (ext. 3-5008) for an interpreter.

1. Patient's last name, first name and middle initial.

2. Sponsor's social security number plus family member two digit prefix code.

RELATIONSHIP TO SPONSOR	PREFIX CODE
Sponsor (Active Duty, reserve and retired Uniformed Services Personnel: Army, Navy, Air Force, Marine Corps, Coast Guard, Public Health Service and National Oceanic and Atmospheric Administration)	20
Spouse (first, if eligible)	30
Subsequent spouses	31, 32, etc.
Oldest child (includes stepchildren)	01
Subsequent children	02,03,04, etc.
Dependent Mother	40
Dependent Father	45
Dependent Mother-in-law	50
Dependent Father-in-law	55
Other authorized dependents	60, 61, 62, etc.
All other authorized personnel (Foreign Nationals: Including Foreign Military, Civilian Humanitarians, DOD civilians, etc.)	20
First beneficiary authorized by statue	90
All others, not elsewhere classified	99
Civilian employees	98

3. Requesting Wards/Clinics

a. Hospital Wards/Clinics

(1) Orders must be entered into CHCS. Paper chits are unacceptable unless CHCS is not functioning.
Verbal or phone orders are not encouraged however, if a phone/verbal order is received, requests must be entered immediately via CHCS in order for results to be certified. At no time will verbal/phone requests have results certified or given to provider without CHCS lab orders. Any verbal communication will be to confirm the status of a sample on-hand or other general communication related to testing requirements. However, as noted above, orders must be entered into CHCS. If a verbal order is accepted, the personnel receiving the verbal or phone order will read back the entire order to verify accuracy of transcription.

(2) Orders that are over 90 days will not be utilized. Orders over 360 days will automatically delete from the system.

b. Outlying Clinics, Commands and Civilian Providers

(1) Civilian providers must include complete mailing address, phone and fax numbers. Request chit/prescription should include civilian DEA number so the provider can be entered into CHCS.

(2) Military commands must include the complete mailing address, including the name of the ship, etc., for which results are to be forwarded.

4. Health record location (where health record is maintained).

5. Date of birth

6. Sex (reference values and follow-up testing depend on this information).

7. Requesting physician's last name, first initial and last six (6) digits of SSN.

8. Request date

9. Date and time specimen(s) collected.

10. Test(s) requested.

11. Specimen source (microbiology and body fluid specimens). Medication(s) patient is taking. This is especially important for microbiology and coagulation specimens.

12. Any additional information that would aid in the interpretation of test results.

B. CHCS down time procedures:

The following request chits are used **ONLY** when CHCS is not operational and cover the majority of laboratory tests performed:

1. NAVMEDCEN PTS 6510/58 (REV 7/93) ROUTINE REQUEST

2. NAVMEDCEN PTS 6510/54 (REV 7/93) URGENT REQUEST

3. NAVMEDCEN PTS 6510/52 (REV 9/93) EMERGENCY REQUEST

C. All specimens will be submitted to the Laboratory with the following information on the label:

1. Patient's last name, first name, middle initial.

2. Sponsor's Full SSN with 2-digit prefix.

3. Date and time specimen was collected.

4. Location where collected.

5. Initials of person collecting the specimen. Specimens for Transfusion Service require the signature of the phlebotomist on the label (NAVMEDCENPTSVAINST 6530.4).

6. Initial of second verifier (can be staff, patient, parent/guardian).

Note: Before transporting to the Laboratory, place all specimens into an appropriately labeled and well constructed primary container with a secure lid to prevent leakage during transport. Place primary container into a leak-proof secondary container (e.g., a Ziploc plastic bag) along with the request.

D . Special Requests:

1. Consults (SF 513) must contain the patient's clinical history relevant to the tests requested.

2. Microbiology slides will be labeled with the date slide was prepared and patient's last name and first initial. The Laboratory will add the full laboratory accessioning number. Using a pencil, write the information on the frosted end of the slide only. Do not use a pen or paper labels.

E. **Test Priorities**:

1. General Lab:

a. **Routine/pre-op**: Routine requests performed have a maximum allowable turnaround of one workday (24 hours). Some specialized testing may take longer. Refer to LTI in CHCS for further details.

Note: All requests presented to the Laboratory without a priority assigned will be treated as a routine request.

b. **ASAP**: Tests that are needed to make a decision or take rapid action to prevent clinical deterioration of a patient should be requested ASAP. Turnaround time is within (2hours) with results posted in CHCS. If CHCS is down, results will be telephoned to the requesting physician or the requesting location.

c. **STAT**: STAT requested tests should only be used to provide information necessary for treating a patient with a life or limb threatening situation. Maximum turnaround time is 60 minutes from time in lab and results will be posted in CHCS. If CHCS is down, the results will be telephoned to the requesting provider or the requesting location. If a significant delay in turnaround time is anticipated due to unforeseen circumstances, such as instrument malfunction, the Laboratory will telephone the requesting location. If a significant proportion of our provider's network is affected, a message will be placed in CHCS.
Note: Turnaround time is based on the time the specimen is received in the Laboratory department.

2. Blood Bank:
Blood bank has 2 priority types of requests. Routine and Emergency Release. See instructions 6530.4 for Blood Bank priorities.

F. **Specimen Labeling:**

1. Labeling of the specimen must be done at the patient's bedside/in the presence of the patient. **Note:** Some specimens (e.g., PAP smears) have unique labeling requirements as indicated throughout this document.

2. **No specimen will be accepted that does not have at least the COMPLETE NAME and COMPLETE SSN with prefix. The last four digits of the SSN are unacceptable.** Only in dire circumstances will a mislabeled specimen be tested. The laboratory recognizes that there are occasionally rare or extremely difficult specimens that may be submitted without proper **(**e.g. neonatal specimens, tissue biopsies, wound cultures collected in OR and body fluids **EXCEPT** for voided urine or blood).In these cases there may be an exception to these rules. The HCP or Registered Nurse in care of the patient **will be required** to report to the Laboratory and positively identify the specimen. A waiver accepting responsibility for the specimen integrity will be signed and the laboratory will generate a PSR. According to NAVMEDCENPTSVAINST 6530.4 series, there are **NO EXCEPTIONS** in regards to specimens for Blood Bank. Mislabeled PAP smears will also be summarily rejected. **Unlabeled specimens are not acceptable. All specimens that arrive unescorted (i.e., via the tube system or simply dropped off at the receiving window) that are not labeled will be discarded. NO EXCEPTIONS.**
See instruction 6530.4 for Blood Bank specimen requests.

3. The specimen label must be affixed to the primary specimen container. The 'Primary' specimen container is the innermost container received by the laboratory that actually holds the specimen.

G. Causes for sample rejection:

Specimens will be rejected for analysis when the following conditions exist:

1. Quantity insufficient for proper performance of requested test.
2. Specimens improperly labeled, unlabeled, or with specimen/label discrepancies (specimens will not be returned).
3. Specimens that are submitted with the label not affixed to the primary specimen container.
4. Specimens that are clotted
5. Specimens with request forms improperly filled out.
6. Culturette™ swabs that have been allowed to dry out or have not been submitted within 24 hours of specimen collection.
7. Sputum specimens for routine culture with greater than 10 epithelial cells per low power field.
8. Urine cultures submitted in non-sterile cups (household jars) or submitted in leaky containers.
9. Grossly hemolyzed specimen
10. Fecal specimens submitted in anything other than a sterile specimen cup. **Exception: Fecal swabs are permitted on infants.**
11. Grossly contaminated specimens.
12. Viral or Chlamydia cultures that are not submitted in the proper transport media.
13. PAP tests with labeling discrepancies.
14. UNSATISFACTORY specimens for anaerobic cultures are: Throat, Nasopharyngeal swabs, Gingival swabs, sputum or Bronchoscopic specimens, gastric contents, feces, rectal swabs, vaginal or cervical swabs.
15. Any specimen that is not submitted according to collection criteria.

H. Laboratory procedure for unacceptable specimens:

1. The Laboratory will contact ward or clinic, explain the problem, and request another specimen.

2. Upon receipt of the new specimen, the unacceptable specimen will be discarded. Old accession order is either canceled if not received or resulted appropriately with a comment notating provider notification.

3. If a new specimen is not obtained, the test will be cancelled with documentation in CHCS regarding the reason for rejection and the person that was notified. If the clinic is closed, the Laboratory staff will contact the clinic on the next working day.

4. Specimens from unknown locations will be retained for one week (or less if specimen integrity is compromised by storage) if they are identifiable by name and SSN.

5. Refer to Appendix A, NAVMEDCENPTSVAINST 6530.4 series for sample collection and submission for Blood Bank testing.

IV. COMPUTERIZED TUBE SYSTEM:

A. Specimens for laboratory testing may be hand-delivered from the wards/clinics/other laboratories/other requesting locations to the Laboratory in compliance with the current NMCP Infection Control policy on proper handling of laboratory specimens. Specimens may also be delivered through the Computerized Tube System. Please refer to NAVMEDCENPTSVAINST 11301.1 series.

B. Important Laboratory Station Location Codes:

12 Specimen Receiving
13 Blood Bank
14 Histopathology

C. If the sender contacts the Laboratory and discovers a tube carrier has not arrived at the laboratory location, it is the sender's responsibility to locate the carrier. The sender must contact Systems Control at extension 3-0050, who will locate the carrier and send it to the Laboratory. Systems Control is available 24 hours per day.

D. If a carrier is accidentally received at an incorrect station, forward to the appropriate station. If the sending/receiving station is unknown, contact Systems Control, extension 3-0050, to track and identify the sender station address in order to return the carrier.

E. Before transporting the specimen to the laboratory, place all specimens into an appropriately labeled and well constructed primary container with a secure lid to prevent leakage. Place the primary container into a leak-proof secondary container (e.g. a Zip-lock plastic bag) along with the request.

F. The following specimens cannot be transported via tube system:

1. 24 Hour Urine
2. Any preserved specimen with formalin or alcohol
3. Body fluids/CSF
4. Large definitive surgical resections
5. Blood products

NOTE: Any specimen that could not be easily re-collected should be hand carried to the laboratory as specimen may leak or break during transport in the pneumatic tube system.

G. If CHCS is down, the tube system is turned off.

LABORATORY POLICY ON TELEPHONE REPORTS OF LABORATORY RESULTS

I. POLICY:

A. Per reference (a) and (b), any credentialed medical staff of NMCP, including its Branch Clinics, with clinical privileges may receive laboratory test results via the telephone. Credentialed medical staff includes the following:

1. Physicians
2. Dentists
3. Nurse Practitioners
4. Nurse midwives
5. Nurse anesthetists
6. Clinical psychologists
7. Optometrists
8. Clinical dietitians
9. Podiatrists
10. Clinical social workers
11. Physical therapists
12. Occupational therapists
13. Audiologists
14. Speech pathologists
15. Physician assistants
16. Independent Duty Corpsman (IDC)

B. Request for laboratory test results via telephone will be referred to Laboratory Client Services at 953-1621 during normal working hours. After hours, these calls should be referred to the senior laboratory technician, pager # 988-9306.

C. Client Services, or the senior tech, are authorized to provide laboratory test results to the above credentialed medical staff. A reasonable attempt must be made to verify the identity and credential status of the requester.

D. Client Services or the senior technician are also authorized to provide laboratory results to registered nurses. They are to verify the identity and status of the requester.

E. Client Services, or the senior technician, are also authorized to provide laboratory test results to military HCP's out in the fleet who are not credentialed at NMCP but who have submitted laboratory requests for their patients.

F. Civilian HCP's who request laboratory test results originally ordered by another HCP and are not credentialed at NMCP must submit a Patient Release Form signed by the patient before laboratory test results are released by phone, fax, or written report. The civilian HCP should already have this form in their office. If the same civilian HCP requesting the Laboratory results originally ordered the Laboratory tests, they may be released by fax or written report.

G. All facsimile and written patient reports to be released should be accessed from CHCS through "^PEC." Reports accessed through "^PLI" are not official documents.

H. LABORATORY REPORTS WILL NOT BE GIVEN TO THE PATIENT BY PHONE, FAX, OR WRITTEN REPORT. If the patient presents with a prescription where the provider authorizes them to receive the report, Client Services will print the report and fax the report to the requesting HCP.

I. Patients may also obtain Personal Health Data such as laboratory reports through Tricare online which is a secure access website (www.tricareonline.com). Patients can gain access, view or download personal health date containing lab results, allergy profile, medication profile, problem list and encounter data. Information for obtaining access to Tricare online is available to patients at the phlebotomy reception desk in Client Services.

J. All patient information and results will be handled in accordance with NMCP's policy on the Health Insurance Portability and Accountability Act of 1996.

II. REFERENCES:

A. Privacy Act of 1975 (PL93-579)

B. Naval Medical Center, Portsmouth VA Medical Staff Bylaws, 1995

POLICY REGARDING TESTS ORDERED BY NON-MILITARY PROVIDERS

The Laboratory Medicine Department will accept all laboratory requests from TRICARE patients (Prime, Extra, and Standard/Champus) and other eligible beneficiaries (e.g., retirees with Medicare). This includes performance of the in-house test menu and most mail out testing. Patients will be asked to complete a form for third party billing if they have supplemental insurance.

I. LAB POLICY:

A. Patients presenting to the Laboratory Medicine Department with laboratory requests from a civilian healthcare provider must have a signed script with the provider name, address and telephone/fax contact information for the requesting provider. The laboratory staff member will adhere to the following step-wise procedure for accessioning orders received.

1. Patient presents to the lab or clinic with written civilian provider script for lab work.
2. Laboratory staff will verify that the provider has signed the script.
3. Verify if script has multiple contact information (i.e. physician group offices/group practice) and confirm with the patient which specific provider is applicable to their care – highlight and/or circle the correct contact information on the script.
4. Handwritten scripts that are illegible or unclear (i.e. orders using non-standard or non-specific terms) will be verified by the ordering provider and provider will be asked to provide a number for after hours contact.
5. Laboratory staff will log into CHCS, and perform ^OLG function on all lab orders that are printed on the script, including future or timed orders.
6. Within the ^OLG function, at the order comment field, the technician will manually enter the provider's contact information. Verify that provider name, telephone and fax number are entered in the comment field. **NOTE: The contact information is only required to be entered on one order if multiple orders are present.**
7. Once all orders have been placed into CHCS, the original provider's script will be filed in the respective accordion file by date received in the Client Services Phlebotomy accession area.
8. In the event that CHCS is down, or data has not been entered into CHCS, please refer to the patient's original script filed by date received (for location and contact information purposes).
9. Completed scripts and associated faxed results that are greater than 31 days old are maintained in for two years in the scripts archive file, by patient last name in alphabetical order.

GUIDELINES FOR COLLECTION OF LABORATORY SPECIMENS

II. PURPOSE:

To provide general guidelines on proper collection of specimen(s) frequently submitted to the Laboratory Medicine Department. For additional specific information on individual test requirements, including patient preparation, type of collection container and amount of specimen to be collected, need for special timing for collection of specific tests (e.g. creatinine clearance), types and amounts of preservatives or anticoagulants or the need for special handling between time of collection and time received by the laboratory (e.g. refrigeration, immediate delivery), please refer to Appendix A or each specific test listing. For additional assistance with specimen collection questions or concerns, please contact Laboratory Client Services at 953-6244/1621. Additionally, all sample requirements may be accessed via CHCS. In the event that CHCS is down, please contact Specimen Processing at 953-6244.

To access individual test requirements in CHCS:

A. From the main menu in CHCS enter ^LTI.

B. Enter in desired test. CHCS will display the pertinent information for the desired test (e. g., Specific tube, minimum sample, turn-around-time).

C. The laboratory has a list of current test methods and performance specifications available to clients upon request. If the laboratory significantly changes analytical methodology or test interpretation, clients will be notified via ALLMAR (Outlook) e-mail accounts. If the client does not have access to such an account, a direct mailing will be available upon request.

D. The Laboratory has reviewed its phlebotomy practices to minimize unnecessary large blood draw volumes. As a result of the review, minimum amount of specimen is published in CHCS to encourage hospital staff to avoid large blood draw volumes. This laboratory selects instrumentation that employs microsampling so as to minimize specimen requirements for testing. If still unclear, please contact Laboratory Client Services at 3-1621, or 1622. If analytic methodology is changed so that test results or their interpretations may be significantly different, health care providers are notified of such change by an associated comment with every patient report and an e-mail notification via the Naval Medical Center Portsmouth Information System (CHCS). Upon request, Client Services will provide information to clients regarding test methodology and performance specifications (interference and limitations).

SPECIMEN COLLECTION AND HANDLING REQUIREMENTS FOR COAGULATION TESTING

I. Purpose:

To provide general guidelines on the proper collection and handling of specimen(s) submitted to the Laboratory for Hemostasis testing.

II. Principle:

A. Specimen collection from intravenous lines and indwelling catheters requires special consideration. Collection of blood for coagulation testing through intravenous lines that have been previously flushed with heparin should be avoided, if possible. If the blood must be drawn through an indwelling catheter, possible heparin contamination and specimen dilution should be considered.

1. When obtaining specimens from indwelling lines that may contain heparin, the line should be flushed with 5 ml of saline, and the first 5 ml of blood or 6=times the line volume (dead space volume of the catheter) be drawn off and discarded before the coagulation tube is filled.

2. For those samples collected from a normal saline lock (capped off venous port) twice the dead space volume of the catheter and extension set should be discarded.

Note: if only a Coagulation specimen is drawn, a pilot tube (plain red top) should be collected and discarded. If multiple specimens are collected, the coagulation specimen should be collected into the second or third tube. Specimens submitted for APTT testing must be submitted to the laboratory within 4 hours of collection.

- **All specimens for coagulation testing will be collected in 3.2% Sodium Citrate tube.**

B. Specimens for coagulation testing that are submitted under- or overfilled will be rejected according to lab policy.

1. The recommended proportion of blood to the 3.2% Sodium Citrate anticoagulant Volume is 9:1. Inadequate filling of the collection tube will decrease this ratio, and may Lead to inaccurate results for calcium-dependent clotting tests, such as the PT and aPTT. The effect on clotting time from under-filled tubes is more pronounced when samples are collected in 3.8% rather than 3.2% sodium citrate. The effect of fill volume on coagulation results also depends on the reagent used for testing, size of the evacuated collection tube, and citrate concentration. A minimum of 90% fill is recommended; testing on samples with less than 90% will not be processed as the effects on testing results has not been validated by the laboratory.

Note: To ensure the correct ratio of blood to additive, it is critical to allow tubes containing additives to fill completely. Gently invert the tube(s) to mix the specimen and additive. Use the proper collection container and do not transfer the specimen from one type of Vacutainer to another. Blood collection tube caps should never be removed to prevent over or underfilling. The proper way to fill a blood collection tube if not using a Vacutainer collection device is to use a syringe and needle of adequate size (20 gauge or greater) in order to prevent hemolysis of the red blood cells. Insert the needle into the tube cap, allowing the blood to fill the tube by vacuum. Vacutainer tubes fill by means of negative pressure and will automatically fill to the correct volume of blood and then stop. Blood should never be forced into the collection tube by pressing on the syringe plunger.

C. Coagulation tests will be promptly performed on fresh plasma, or platelet-poor plasma is frozen until testing can be performed.
NOTE: After blood collection, there is a progressive degradation of labile coagulation factors V and VIII, leading to increased prolongation of the aPTT and PT. The allowable time interval between specimen collection and sample testing depends on the temperature encountered during transport and storage of the specimen. Allowable time intervals are as follows:

1. aPTT specimens that are uncentrifuged with plasma remaining in the capped tube above the packed cells should be kept at 18 to 24°C and tested no longer than 4 hours after the time of specimen collection.

2. aPTT specimens that are centrifuged and plasma separated from the cells can be kept for 4 hours at 2 to 8°C or 18 to 24°C. Samples for unfractionated heparin testing should be centrifuged within one hour from the time of specimen collection.

D. It may be necessary to collect specific patient information required by the testing laboratory (e.g. bleeding history for specialized coagulation assays, etc.).

E. **NOTE:** A hematocrit value >55% may lead to spurious coagulation results. The citrate anticoagulant distributes only in the plasma and not into the blood cells. For this reason, plasma citrate concentration will be increased if the patient's hematocrit is greater than 55%, potentially leading to spuriously prolonged PT and APTT results, as well as erroneous results for other calcium-dependent clotting tests such as clottable protein C/protein S and Factor assays. Accordingly, there should be a documented procedure for detection and special handling of polycythemic specimens. If possible, a new phlebotomy should be performed, using a reduced volume of sodium citrate, adjusted for the elevated hematocrit. Conversely, there are no current data to support a recommendation for adjusting citrate concentration in the presence of severe anemia (hematocrit <20%).

Coagulation Test Recommendations

Argatroban – APTT and /or Anti Xa (note that this medication will falsely elevate an INR which is included with a Prothrombin time test. A truer INR can be determined by holding Argatroban x 4 hours and then drawing the Prothrombin time/INR especially during bridging)

Coumadin– Prothrombin time with INR (PT/INR)

Dabigatran (Pradaxa) – APTT (This is a qualitative test for medication meaning the patient has received the drug recently but this does not quantitatively determines how anticoagulated the patient is). An Ecarin clotting test can be send to Reference lab for quantification; Request "Ecarin clotting time" under Misc lab and type in test name. Specimen is sent to LabCorp and test be performed at Esoterix for #300814.

Enoxaparin and/or Danaparoid –for any patient meeting testing criteria**,** request Heparin Anti Xa Low Molecular Weight Heparin.

Fondaparinux – Test performed at Reference lab. Request "Heparin Anti Xa LMWH for Fondaparinux" under Misc Lab. Specimen sent to lab and test will be performed at ARUP test code is 30144.

Heparin, other low molecular weight heparin, not Enoxaparin – Test performed at Reference lab. Request "Heparin Anti Xa, LMWH for name of drug" under Misc Lab and type in test name. Specimen is sent to LabCorp and test be performed ARUP test code is #31044 and heparin type is required.

Heparin, unfractionated-- Activated Partial Thromboplastin Time (APTT or PTT) and/or Factor Xa Inhibition.

Plavix – currently no specific testing offered.

Warfarin - Prothrombin time with INR (PT/INR).

Heparin-Induced Platelet Antibody Test (HITA Test) - Test performed at Reference lab. Request HITA test under Misc Lab and type in test name. Specimen is sent to LabCorp and test be performed at Esoterix Test Code # 300522.

PFA, Platelet Function Assay is used to detect platelet dysfunction due to drug effect or intrinsic platelet dysfunction. This test protocol uses epinephrine and ADP as agonists.

SPECIMEN COLLECTION AND HANDLING REQUIREMENTS FOR THERAPEUTIC DRUG MONITORING

I. Purpose:

To provide general guidelines on the proper collection and handling of specimen(s) submitted to the Laboratory for Therapeutic Drug Monitoring (TDM). It is the intent of the laboratory to assist the clinician with the ability to easily and accurately link TDM results from the lab to the dosage and time of drug administration. Communication with the laboratory is key to ensuring this service provides accurate and precise information to the healthcare provider. For those patients requiring TDM monitoring, the dosage and time of drug administration must be included with the lab test request in the Order Required Entry when placing the lab order in CHCS by the health care provider. This is required so that clinicians can easily and accurately link TDM results from the laboratory to the dosage and time of drug administration. The test result, dose and administration time would be reported in the lab report if all required data is inputted as requested.

The laboratory offers peak and trough level testing for TDM's, however when requesting, the dosage and time of drug administration is required so that the lab results can be reported with this information in conjunction with the CHCS lab report.

A. Testing for the following Therapeutic Drugs is performed at NMCP laboratory.
   1. Vancomycin
   2. Gentamycin

3. Theophyline
4. Phenytoin (Dilantin)
5. Valproic Acid
6. Digoxin
7. Carbamazepine
8. Lithium

B. The following Therapeutic Drugs are referred out to reference laboratories for testing.
1. Amikacin
2. Tobramycin
3. Phenobarbital

C. Please refer to Laboratory Blood Specimen Collection Requirements of this manual for specific information regarding specimen volume and type for each individual drug and most importantly the optimal specimen collection time in relation to drug dosing.

LABORATORY BLOOD SPECIMEN COLLECTION REQUIREMENTS

TEST NAME	REQUIREMENTS
17 HYDROXY CORTICOSTERIOD & KETOSTEROID	**DEPARTMENT:** Mail out **PREPARATION:** If possible, all drugs should be withheld for 72 hours prior to and during collection of urine. **SPECIMEN VOLUME & TYPE:** Urine (24-hour) **CONTAINER:** Plastic urine container, acquire from Lab receiving.
17 HYDROXYPROGES-TERONE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 0.3 ml serum **CONTAINER:** Red-top tube, SST, or lavender tube with Potassium EDTA (K2 EDTA).
5 HIAA (QUANTITATIVE	**DEPARTMENT:** Mail out **PREPARATION:** Avoid bananas, avocados, plums, eggplant, tomatoes, pineapple, walnuts, and interfering drugs for a 72-hour period prior to and during the collection. **SPECIMEN VOLUME & TYPE:** 24 hour urine **CONTAINER:** Plastic Urine container **WARD REMARKS:** 30mL 6N HCL or 1g/L boric acid may be added as preservative for other tests without harm to 5-HIAA.
ABO GROUP & RH TYPE	**DEPARTMENT:** Blood Bank **SPECIMEN VOLUME & TYPE:** 6mL whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **WARD REMARKS:** If transfusion may be required, 6530/9 Request for Blood Products or Essentris equivalent must accompany specimen. See Type and Screen.
ACETAMINOPHEN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 2ml serum **CONTAINER:** Plain red **WARD REMARKS:** no gel tubes accepted. To determine toxicity, collect 1 specimen 4 to 6 hrs after ingestion & another specimen 7 to 10 hrs after ingestion.

TEST NAME	REQUIREMENTS
ACETONE, SERUM	Refer to Ketone, serum
ACETONE, URINE	Refer to Ketone, urine
ACID PHOSPHATASE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 2ml serum **CONTAINER:** Red-top tube or SST **WARD REMARKS:** Must be placed on ice immediately and transported directly to laboratory.
AFP, MATERNAL SERUM SCREENING.	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 0.5 ml serum **CONTAINER:** Red-top tube or SST **WARD REMARK:** The maternal serum AFP test in pregnant women should be performed between 15.0 and 22.9 weeks gestational age, although the optimal period is 15.0 – 16.9 weeks. ***NOTE: The following data must be provided with the specimen in order to permit accurate interpretation of results: Date of collection, Patient's (maternal) date of birth, patient's estimated date of delivery, patient's weight, patient's race, patient's diabetic status (is patient insulin-dependent before pregnancy), number of fetuses, and whether this is a repeat sample.***
AFP, TUMOR MARKERS	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2 ml serum **CONTAINER:** Red-top tube or SST **WARD REMARKS:** This test does NOT provide serial monitoring.
ALANINE AMINOTRANSFERASE(ALT,SGPT)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 1ml serum or plasma **CONTAINER:** Red-top, SST, or green PST (Li Heparin) only
ALBUMIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 1ml serum or plasma **CONTAINER:** Red-top, SST, or green PST (Li Heparin) only
ALCOHOL- MEDICAL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 7ml serum/plasma **CONTAINER:** Red top tube or SST, Gray (NaF or Potassium Oxalate) tube, or green PST (Li Heparin) **WARD REMARKS:** submit unopened tube only. Clean site with non-alcoholic soap only.
ALCOHOL- MEDICAL (SERUM)for Branch Health Clinics only	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 7ml serum **CONTAINER:** Gray **WARD REMARKS:** do not open tube! Bring to lab immediately for processing. Clean site with non-alcoholic soap only.
ALCOHOL- MEDICAL (URINE)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 10ml urine random **CONTAINER:** Urine cup **WARD REMARKS:** bring to laboratory immediately
ALCOHOL-LEGAL	Not performed by NMCP or BHCs. Contact lab for more information.
ALCOHOL-LEGAL AIRCRAFT MISHAP AFIP (WHOLE BLOOD)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 7ml whole blood (2 tubes) **CONTAINER:** Gray (NaF or Potassium Oxalate) tube.

TEST NAME	REQUIREMENTS
	WARD REMARKS: for aircraft mishap/competency for duty only...require AFIP Form 1323 chain of custody form
ALCOHOL-LEGAL AIRCRAFT MISHAP AFIP (URINE)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 5ml urine, clean catch **CONTAINER:** Sterile urine cup **WARD REMARKS:** for aircraft mishap/competency for duty only...require AFIP Form 1323 chain of custody form
ALKALINE PHOSPAHTASE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2 ml serum or plasma **CONTAINER:** Red-top or SST, or green PST (Li Heparin)
ALKALINE PHOSPHATASE ISOENZYME	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 4 ml serum **CONTAINER:** Red-top tube or SST **PATIENT PREPARATION**: Patient should be fasting overnight. Patients who have B or O Blood group and secretions may have an elevated ALP about 2 hours after a fatty meal. **WARD REMARKS:** NOTE 1: Test should ONLY be ordered when Total Serum ALK PHOS is abnormal. Note 2: contraindication for ALKP isoenzyme panel: normal serum total ALKP Note 3: test includes relative % of liver, bone, and intestinal ALKP **Bring specimen to laboratory within 1 Hour of collection**
ALPHA-1-ANTITRYPSIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 1 ml serum **CONTAINER:** Red-top tube or SST, no plasma **WARD REMARKS**: Overnight fasting specimen is preferred. No special patient prep necessary
AMIKACIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 1 ml serum/plasma **CONTAINER:** Red-top tube or green top heparin **WARD REMARK**: NO GEL TUBES ACCEPTED. Pharmacology (dosage & time) sheet required. COMMENTS: Trough specimens should be drawn immediately prior to the next dose. Peak specimens should be drawn 1 hr after initiation of 30 minute infusion, or 30 minutes after longer infusions. . PLEASE LABEL TUBES APPROPRIATELY AS “PEAK” AND TROUGH”
AMINO ACID FRACTIONATION, QUANT, URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 24hr urine (24 Hr) **CONTAINER:** 24 Hour Plastic urine container, **No Preservative** **WARD REMARKS:** obtain instructions and collection container from laboratory. Container must be labeled with patient’s full name, date and time collection started and date & time collection finished.
AMINO ACID, FRACTIONATION, QUANT, PLASMA	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 4ml plasma **CONTAINER:** Green (Na heparin) tube
AMMONIA	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 4ml plasma, No hemolyzed specimens

TEST NAME	REQUIREMENTS
	CONTAINER: Green PST (Li Heparin) **WARD REMARKS:** Specimen must be placed in a cup of ice & bring to lab within 10 minutes after collection for specimen processing. No short draw specimen accepted. **PATIENT PREPARATION:** Patient should be fasting 12-14 hours to avoid lipemia which interfere with the test. Patient should not clinch fist during venipuncture.
AMYLASE, SERUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE:** 2ml serum or plasma **CONTAINER:** Red-Top tube, SST, or green PST (Li Heparin)
AMYLASE, URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 24 hour Urine **CONTAINER:** 24 Hr plastic urine container, **No preservative** COMMENTS: obtain instructions and collection container from laboratory. Container must be labeled with patient's full name, date and time collection started and date & time collection finished.
ANGIOSTENSIN-1-CONVERTING ENZYME (ACE)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 2mL Serum **CONTAINER:** Red-Top tube, SST. **PATIENT PREPARATION:** Stop administration of captopril, enalapril, or lisinopril for 12 hours prior to venipuncture (reduces ACE Activity)
ANTIBODY ID	**DEPARTMENT:** Blood Bank **SPECIMEN VOLUME & TYPE:** 6ml Whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube Comment: Antibody ID is automatically performed if antibody screen is positive.
ANTIBODY SCREEN (INDIRECT COOMBS)	**DEPARMENT**: Blood Bank **SPECIMEN VOLUME & TYPE:** 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube
ANTIBODY TITER	**DEPARMENT**: Blood Bank **SPECIMEN VOLUME & TYPE:** 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **WARD REMARKS:** Specify the antibody to be there (for prenatal patients)
ANTIGEN TYPING	**DEPARMENT**: Blood Bank **SPECIMEN VOLUME & TYPE:** 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **WARD REMARKS:** Specify the antigen to be tested
APTT(ACTIVATED PARTIAL THROMBOPLASTIN TIME)	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE:** Specimen tube capacity, plasma **CONTAINER:** Light blue (3.2% Sodium Citrate) tube **WARD REMARK:** FULL TUBE REQUIRED ***See specimen collection and handling requirements for coagulation specimens.** **Note: Specimens for APTT testing must be submitted to the laboratory and tested within 4 hours of collection. Please indicate time of collection on the label.** ***Attention Medical Providers:*** *Patients receiving Heparin require monitoring of the anticoagulant effect to insure therapeutic levels and reduce the risk of bleeding. An APTT value that is 1.5 times the established normal mean value (28.4 seconds)*

TEST NAME	REQUIREMENTS
	obtained 6 hours after the last dose, is adequate to minimize the risk of recurrent thrombosis. Monitoring studies should be performed at least as frequently as every 24 hours. This recommendation is made as a guide to therapy only.
ASPARTATE AMINOTRANSFERASE (AST, SGOT)	**DEPARTMENT**: Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red-top tube, SST, or green PST (Li Heparin)
ASPERGILLUS (CF)	**DEPARTMENT**: Microbiology **SPECIMEN VOLUME & TYPE**: 3ml Cerebrospinal Fluid (CSF) **CONTAINER**: Sterile tube **WARD REMARK**: Send CSF to NMCP Lab within 30 minutes of collection. CSF Specimen can ONLY be accepted at NMCP LAB for Fungal AB Panel.
B12	**DEPARTMENT**: Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red-top tube or SST Bring the Specimen to the laboratory within 45 minutes of collection for immediate specimen processing. **WARD REMARKS**: FASTING SPECIMEN PREFERRED. When collected with Folate order, wrap specimen in Aluminum foil to protect it from light.
B12 & FOLATE	**DEPARTMENT**: Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red-top tube or SST **WARD REMARKS**: Wrap in aluminum foil to protect from light.
B12 BINDING CAPACITY	**DEPARTMENT**: Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red-top tube or SST
BASIC METABOLIC PANEL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or PST green (Li Heparin)
BILIRUBIN NEONATAL	**DEPARTMENT**: Chemistry **SPECIMEN VOLUME & TYPE**: 1ml serum or plasma **CONTAINER:** Microtainer, red top tube or SST, or green PST (Li Heparin) (Preferred) **Ward Remarks**: Test limited to patients 2 weeks of age or younger or for follow-up. Do not expose to light. Microtainer must be full.
BILIRUBIN, TOTAL	**DEPARTMENT**: Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red-top tube, SST, or green PST (Li Heparin)
BILIRUBIN, DIRECT (Bc)	**DEPARTMENT**: Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red-top tube, SST, or green PST (Li Heparin)
BLEEDING TIME	**DEPARTMENT**: Hematology **SPECIMEN VOLUME & TYPE**: Special collection, call lab. **CONTAINER**: N/A (performed in lab)
BRAIN NATRIURETIC PEPTIDE (BNP) **NT pro-BNP**	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: specimen tube capacity, Plasma 2 mL, no hemolyzed specimens, No turbid specimens **CONTAINER**: Green PST (Li Heparin) only **WARD REMARK:** Only collect in plastic Li Heparin tubes because BNP is unstable in

TEST NAME	REQUIREMENTS
	glass tubes!
BUN(BLOOD UREA NITROGEN)	**DEPARTMENT**: Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red-top tube, SST, or green PST (Li Heparin)
C-PEPTIDE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml Serum **CONTAINER**: Red-top tube or SST **WARD REMARK**: Fasting draw in chilled tube. Patient should be fasting. Bring specimen to laboratory immediately for special specimen processing.
C3	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2mL serum or plasma **CONTAINER:** Red–top , SST, or green PST (Li Heparin)
CALCITONIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml Serum **CONTAINER:** Red–top tube or SST **Ward Remark:** Patient must be fasting
CALCIUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin) ***Attention medical Providers:*** *1. If your patient had a radiology procedure where the HYPAQUE RADIOGRAPHIC CONTRAST AGENT was used, then the CALCIUM RESULT MAY BE INACCURATE because blood containing this media cannot be tested.* 2. *If your patient has been medicated with the ANTIPARASITIC DRUG: SURAMIN, then it has been reported that the CALCIUM RESULTS may present a negative 10% at a SURAMIN CONCENTRATION OF 300 MICROGRAMS PER ml.*
CALCIUM, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 24hr urine or 50ml random urine **CONTAINER:** Random specimen: Plastic urine container 24 Hours urine Specimen: Plastic urine container no preservative. **WARD REMARK:** Obtain 24HR plastic urine container and Instruction for collection in the Lab.
CALCIUM, IONIZED (For NMCP Only)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 1ml plasma-Non-gel green top only **CONTAINER:** Green Top (Sodium Heparin or Li Heparin) **WARD REMARK:** Place on ICE and Immediately transport to Laboratory. Delay in transporting specimen to laboratory may seriously affect results.
CALCIUM, IONIZED (For BHCs/KAHC/LAFB)	**DEPARTMENT:** Mailout **SPECIMEN VOLUME & TYPE**: 2mL serum **CONTAINER:** Serum Separator Tube **WARD REMARK:** Let clot and spin immediately with cap on. Do not open tube. Ship the unopened gel barrier tube at room temperature. Do not freeze.
CARBAMAZEPINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 1mL serum **CONTAINER:** Red–top tube **WARD REMARK:** NO GEL TUBES ACCEPTED. Through: Collect specimen immediately

TEST NAME	REQUIREMENTS
	before the next dose is given. Peak: Draw Peak Level 8 Hrs Post Dose.
CARBON DIOXIDE(CO2)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top, SST, or green PST (Li Heparin)
CARCINOEMBRYONIC ANTIGEN (CEA)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
CATECHOLAMINES, URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 24 hr urine **CONTAINER:** Brown urine container with 30ml 6N HCL. **WARD REMARK:** Obtain instructions and collection container from laboratory. Container must be labeled with patient's full name, date and time collection started and date & time collection finished.
CD4	See T-Subsets
CD8	See T-Subsets
CEREBROSPINAL FLUID (CSF)-COUNT & DIFFERENTIAL	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 2ml CSF **CONTAINER:** Sterile tubes #1 & #4 **WARD REMARK:** Bring CSF tubes to hematology stat for testing. For NMCP: send CSF tube #3 to chemistry for testing. Send tube # 2 for culture; send tubes 1 & 4 to hematology unless tube order changed by provider. Tube order is always at the discretion of the provider. If less than 4 CSF tubes are received, hematology will perform counts on tubes 1 & the last tube collected.
CEREBROSPINAL FLUID (CSF) CULTURE	**DEPARTMENT:** Microbiology **SPECIMEN VOLUME & TYPE**: 2ml CSF **CONTAINER:** Sterile tube # 2 **WARD REMARK:** Bring CSF tubes to hematology stat for testing. For NMCP: send CSF tube #3 to chemistry for testing. Send tube # 2 for culture; send tubes 1 & 4 to hematology unless tube order changed by provider. Tube order is always at the discretion of the provider.
CEREBROSPINAL FLUID (CSF) PANEL, CHEMISTRY (GLUCOSE AND PROTEIN)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml CSF **CONTAINER:** Sterile tube # 3 **WARD REMARK:** Bring CSF tubes to hematology stat for testing. For NMCP: send CSF tube #3 to chemistry for testing. Send tube # 2 for culture; send tubes 1 & 4 to hematology unless tube order changed by provider. Tube order is always at the discretion of the provider.
CEREBROSPINAL FLUID (CSF) VDRL	**DEPARTMENT:** Virology **SPECIMEN VOLUME & TYPE**: 2ml CSF **CONTAINER:** Sterile tube #1 **WARD REMARK:** Cerebrospinal fluid only - order RPR qual for all other sample types! Send to lab w/in 30 min of collection.
CEREBROSPINAL FLUID (CSF) (IgG Synthesis rate, PROTEIN)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 1ml CSF and 2 ml serum **CONTAINER:** Sterile tube and red top tube or SST

TEST NAME	REQUIREMENTS
	WARD REMARK: This test requires both serum and CSF to be sent to the lab at the same time. This profile requires a minimum of 0.5 cc CSF and a serum tube.
CEREBROSPINAL FLUID (CSF) ELECTROPHORESIS	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 3ml CSF and 2 ml serum **CONTAINER:** Sterile tube and plain red or SST **WARD REMARK:** Collect plain red top tube for serum and send with CSF for analysis consult form must accompany this test. Immediately after specimen collection, send serum with CSF for analysis.
CERULOPLASMIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 1ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin).
CH50	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 1ml serum **CONTAINER:** Red-top tube or SST.
CHLAMYDIA-CT GC PROBE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Swab in Gen-Probe transport kit **CONTAINER:** Gen-Probe transport kit **WARD REMARK:** Send to lab w/in 1 hr of collection. Gen-probe collection kits are required for test.
CHLORIDE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
CHLORIDE, URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 24hr urine or 20ml random urine **CONTAINER:** No preservative, plastic urine container for 24 hr or sterile urine cup for random specimen **WARD REMARK:** Recommended collection is 24 hours whenever possible. Keep on ice or refrigerated. Please order CL24 for 24hr urine's.
CHOLESTEROL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2mL Serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
CHROMOSOME ANALYSIS	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 10ml blood **CONTAINER:** Green (Sodium Heparin) tube **WARD REMARK:** DRAWN M-TH before 1300 ONLY/KEEP AT ROOM TEMP/ASAP TO LAB
COCCIDIOIDES IMMITIS AB (CF & ID)	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST **WARD REMARK:** this test is for NMCP & FT Lee labs only
COLD AGGLUTININS	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube

TEST NAME	REQUIREMENTS
COMPLETE BLOOD COUNT (CBC)	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA)
COMPREHENSIVE METABOLIC PANEL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or PST green (Li Heparin)
COMPATIBILITY TEST	See Type and Crossmatch
COOMBS TEST (DIRECT ANTIGLOBULIN TEST)	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **Comment: For INDIRECT Coombs, see Antibody Screen**
CORD BLOOD	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 2ml cord blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube or lavender tube with potassium EDTA (K2 EDTA).
CORTISOL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or PST green (Li Heparin)
CPK-MB	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma, no turbid specimens **CONTAINER:** Green PST (Li Heparin) only
CREATINE KINASE (CK, CPK)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma or serum **CONTAINER:** Green PST (Li Heparin), SST, Red top **When ordered separately, specimen can be plasma or serum** **When ordered with CKMB panel, must be green PST(plasma)**
CREATININE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
CREATININE, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml Urine for random or 24 hour urine container. **CONTAINER:** Urine Cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hour collection container and instructions sheet from Specimen Processing. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
CREATININE CLEARANCE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 24 hour Urine **CONTAINER:** Brown plastic 24 hour urine container **WARD REMARK:** Serum Creatinine needed either 24 hour before or after urine collection. Obtain 24 hour urine collection container and instructions sheet from Specimen Processing. No preservative needed. Keep on ice or refrigerated.
CROSSMATCH (Compatibility test)	See Type and Crossmatch
CRP or High Sensitive	**DEPARTMENT:** Chemistry

TEST NAME	REQUIREMENTS
CRP (C-REACTIVE PROTEIN HIGH)	**SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
CRYOFIBRINOGENS	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 7ml plasma **CONTAINER:** Green (NA heparin or PST Li heparin) tube **WARD REMARK:** Must be kept at 37^{o}C immediately after collection, collect at NMCP only
CRYOGLOBULIN SCREEN	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 10ml serum **CONTAINER:** Red–top tube or SST **WARD REMARK:** Must be kept at 37^{o}C immediately after collection, collect at NMCP only
CRYOFRIBRINOGENS/CRYOGLOBULIN-QUANT	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 7 ml plasma and 10 ml serum **CONTAINER:** Green (NA heparin or PST Li heparin) and red–top tube **WARD REMARK:** Full 7 ml green and full 10 ml red top required. Call special chemistry before drawing. Test has 72 hour incubation time. Must be kept at 37^{o}C immediately after collection, collect at NMCP Only
CRYOPTOCOCCUS ANTIGEN	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 5ml serum or 2ml CSF **CONTAINER:** Red–top tube or SST for serum or sterile tube for CSF. **WARD REMARK:** bring specimen to lab within 1 hour of collection
D-DIMER	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: specimen tube capacity, plasma **CONTAINER:** Light blue (3.2% Sodium Citrate) tube
DESIPRAMINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube **WARD REMARK:** NO GEL TUBE ACCEPTED
DHEA SO4	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST **WARD REMARK:** no isotopes administered 24 hours prior to venipuncture.
DIFFERENTIAL SMEAR	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA).
DIGOXIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red –top tube, plain **WARD REMARK**: NO GEL TUBES ACCEPTED. Draw specimen 6 hours AFTER dose is given, preferably 12-24 hrs after dose.
DIRECT ANTIGLOBULIN TEST (DAT)Coombs	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube
DRUG SCREEN, SERUM AFIP Legal	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 7ml serum

TEST NAME	REQUIREMENTS
	CONTAINER: Red-top tube or SST **WARD REMARKS:** For aircraft mishap/competency for duty only…require AFIP Form 1323 chain of custody form
DRUG SCREEN, URINE-AFIP	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 10ml urine, clean catch **CONTAINER:** Urine cup **WARD REMARKS:** For aircraft mishap/competency for duty only…require AFIP Form 1323 chain of custody form
D-XYLOSE	Contact lab to acquire D-Xylose and schedule test
ELECTROLYTES	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum, plasma or 10 ml Urine **CONTAINER:** Red–top tube or SST, green PST (Li Heparin)or sterile urine cup
EOSINOPHIL, TOTAL & ABSOLUTE COUNT	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA).
EOSINOPHIL, NASAL SMEAR,	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: slide nasal smear **CONTAINER:** Smear
EOSINOPHIL, URINE	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 10 ml urine **CONTAINER:** Urine Cup
ERYTHROPOIETIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
EPSTEIN BARR VIRUS AB PROFILE (EBV AB)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
ESR, Westergren	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
ESTRADIOL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or PST green (Lithium Heparin)
ESTROGEN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
ETHOSUXIMIDE (ZAROTIN)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube **WARD REMARK:** Oral peak draw 2-4 hrs after dose; trough immediately prior to next dose.
ETOH (ETHYL ALCOHOL)	For medical: see alcohol-medical For Legal: not performed by NMCP or BHCs.
EXPANDED STATE METABOLIC SCRN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 6 whole blood circles attached to Virginia state

TEST NAME	REQUIREMENTS
(NEWBORN SCREEN)	department Newborn Screen. **CONTAINER:** PKU Filter Paper-state Lab Form **WARD REMARK:** Contact lab for forms CHECK EXPIRATION DATE ON PKU FILTER PAPER BEFORE USE!! BABY MUST BE LESS THAN 6 MONTHS for this test.
FACTOR ASSAYS	***See specimen collection and handling requirements for coagulation testing.**
FACTOR II	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** this is not factor II mutation – order F II MUT for that test! CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
Factor V	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** this is not factor II mutation – order F II MUT for that test! CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR VII	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR VIII	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR IX	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR X	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR XI	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
FACTOR XII	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** Consult required- schedule test with Special Coagulation.
FACTOR XIII	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood

TEST NAME	REQUIREMENTS
	CONTAINER: Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** Consult required- schedule test with Special Coagulation.
FBS (FASTING BLOOD SUGAR)	*See Glucose **PATIENT PREPARATION: Patient should be fasting 8-10 hours prior to collection.**
FDP (FIBRIN DEGRADATION PRODUCTS)	See D-Dimer
FECAL FAT, QUAL	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 1 gram stool **CONTAINER**: plastic screw-cap vial **WARD REMARK**: 1. Patient should be on a diet containing at least 60g of fat. 2. DO NOT use suppositories or mineral oil before collection 3. DO NOT use Oily material (creams, lubricants, etc.) Prior to or during Collection. Obtain instructions and collection container from laboratory.
FECAL FAT, QUANT	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 72hrs stool **CONTAINER**: Stool collection kits **WARD REMARK:** Obtain instructions and collection container from laboratory.
FECAL LEUKOCYTES SMEAR	**DEPARTMENT:** Microbiology **SPECIMEN VOLUME & TYPE**: 1 gram stool **CONTAINER**: Plastic screw-cap vial **WARD REMARK:** Send to lab w/in 4hrs of collection
FERRITIN	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red tube or SST
FETAL BLEED SCREEN TEST (for RhIg dosage)	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER**: Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **Comment:** Detects minor population of Rh positive cells in Rh negative mother
FETAL HEMOGLOBIN-KLEIHAUER BETKE	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER**: Pink tube with Potassium EDTA (K2 EDTA) or (K3 EDTA) or Lavender tube with Potassium EDTA (K2 EDTA). **Comment:** Submit an SF-513 consult **WARD REMARK:** KB test is available as routine request only and cannot be performed STAT
FIBRINOGEN, FUNCTIONAL	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, plasma **CONTAINER**: Light blue (3.2 % Sodium Citrate) tube
FOLATE	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red tube or SST **WARD REMARK:** WRAP THE SPECIMEN IN ALUMINUM FOIL TO PROTECT IT FROM LIGHT!
FREE ERYTHROCYTE PROTOPORPHYRIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA).

TEST NAME	REQUIREMENTS
Free Triiodothyronine (FREE T3)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
FREE THYROXINE (T4 FREE)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
FOLLICLE STIMULATING HORMONE (FSH)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
FTA-ABS	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
FUNGAL ANTIBODY PANEL	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK:** FID-NMCP or FID-KAHC tests for presence of ASPERGILLUS Ab, Blastomyces Ab, Coccidiodes Ab, Candida Ab, and Histoplasma Ab by IMMUNO-DIFFUSION.
G6PD	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER**: Yellow (ACD) tube or Lavender tube with Potassium EDTA (K2 EDTA)
GAMMA GLUTAMYL TRANSFERASE (GGT)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
GASTRIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK:** PT must be fasting. Collect on ice and send to lab immediately.
GENTAMICIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted. Pharmacology (dosage & time) sheet required. Peak specimens should be drawn 1 hr after initiation of 30 minute infusion or 30 minutes after longer infusions. Trough specimens should be drawn immediately prior to the next dose.
GLUCOSE, CSF	See CSF Panel, chemistry
GLUCOSE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, green PST (Li Heparin), or gray (K oxalate)
GLUCOSE, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER**: Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. Keep on ice or refrigerated. 24 hour specimens not processed stat.
GLUCOSE TOLERANCE TEST	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum

TEST NAME	REQUIREMENTS
3 HR GTT **5 HR GTT** **1 H PG-50G** **1 H PT-75G** **2 H PP** **2 H PT-75G**	**CONTAINER**: For BHCs: Red–top tube or SST For NMCP: Gray tube **WARD REMARK:** 1 HR and 2HR, no scheduling required. Patient must be present prior to 0800. 3HR and 5HR need appointment
GLYCOSYLATED HEMOGLOBIN	See Hemoglobin A1C
GROWTH HORMONE (HGH)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
HAPTOGLOBIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
HCG	See Human Chorionic Gonadotropin
HDL CHOLESTEROL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
HEAVY METALS, SCREEN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml urine **CONTAINER**: Urine cup **WARD REMARK:** No seafood or red wine for 72hrs prior to collection. Acquire a metal-free container from lab prior to collection.
HELPER CELLS (CD4)	See T-Subsets
HELPER/SUPRESSOR RATIO	See T-Subsets
HEMATOCRIT (Automated)	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA).
HEMOGLOBIN	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA).
HEMOGLOBIN A1C	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA).
HEMOGLOBIN ELECTROPHORESIS	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA). **WARD REMARK:** 1. Please order a CBC and smear for RBC morphology with this test 2. Hemoglobin electrophoresis/HPLC requires a CBC and smear for RBC morphology to accurately result interpretation
HEMOGLOBIN-H (Hemoglobin Electrophoresis)	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA). **WARD REMARK:** CBC needed. Order Hemoglobin electrophoresis.

TEST NAME	REQUIREMENTS
HEMOGRAM	See Complete Blood Count (CBC)
HEPATIC FUNCTION PANEL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or PST green (Li Heparin)
HEPATITIS A-IGM	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS A Total Antibody (IgG and IgM)	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS B CORE AB (IGM)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS B "e" ANTIBODY	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK:** Bring to lab within 4 hrs of collection
HEPATITIS B "e" ANTIGEN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS CORE ANTIBODY (TOTAL)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS B SURFACE ANTIBODY	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS B SURFACE ANTIGEN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER**: Red–top tube or SST
HEPATITIS C ANTIBODY (HCV)	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 7ml Serum **CONTAINER**: Red–top tube or SST
HGB & HCT (H&H)	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA).
HIV (RAPID) (NEEDLE STICK ONLY) Performed for PEMD, L&D, Occupation Health	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA). **WARD REMARK:** This test is for Needlestick protocol on the patient who is the source, the employee who was stuck, Labor and delivery mother, active duty receiving smallpox vaccine, or child with HIV positive mother.
HLA B-27	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7 ml whole blood (2 tubes) **CONTAINER**: Yellow ACD tubes or Lavender tube with Potassium EDTA (K2 EDTA). **WARD REMARK:** Draw 2 tubes, 7ml yellow ACD or lavender tube with Potassium EDTA (K2 EDTA).

TEST NAME	REQUIREMENTS
HUMAN CHORIONIC GONADOTROPIN (HCG)QUAL, SERUM	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
HCG, QUAL, URINE	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 10 ml urine **CONTAINER**: Urine cup **WARD REMARK**: Specimen of choice is 1st morning void
HCG, QUANT, TOTAL,	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST tube, PST Green **WARD REMARK:** Not for testing males, order HCG, beta subunit. This HCG test cannot be used for serial monitoring
HCG BETA SUBUNIT	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK:** For male only or female IVF only.
IMMUNOGLOBULIN QUANT PANEL (IGG, IGA, IGM)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 7ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
IMMUNOGLOBULIN IGE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
IMIPRAMINE+DESIPRAMINE (TOFRANIL)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted.
IMMUNOPHENO-TYPING FOR LEUKEMIA AND LYMPHOMA (CYTOLOGIC NON-GYN)	**DEPARTMENT:** Flow Cytometry **SPECIMEN VOLUME & TYPE**: Specify specimen type (lymph node, bone marrow [Na heparin tube], peripheral blood [Potassium EDTA (K2 EDTA) & Na Heparin tubes], fine needle aspirate, body fluids…) **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA) and green tubes for Peripheral blood. Green tube for bone marrow Lymph node, fine needle aspirate in RPMI Body Fluids: Sterile container **WARD REMARK:** Consult needed
INDIRECT COOMBS	**See Antibody Screen**
INSULIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK:** Fasting specimen preferable.
IRON (FE)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml Serum **CONTAINER**: Red–top tube only

TEST NAME	REQUIREMENTS
IRON BINDING CAPACITY (TIBC)	See Total Iron Binding Capacity (TIBC)
KETONES, SERUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST **WARD REMARK**: Provider must specify if dilution of positive specimen is required
KETONES, URINE	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 1ml urine **CONTAINER**: urine cup
KLEIHAUER-BETKE (FETAL HEMOGLOBIN)	See Fetal Hemoglobin
LACTIC ACID (LACTATE)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma **CONTAINER**: Gray tube (Na fluoride/K oxalate) **WARD REMARK:** place sample in ice. Transport to lab immediately for specimen processing transporting delay may cause inaccurate results.
LDH (LACTATE DEHYDROGENASE)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
LEAD	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA)
LEUKOCYTE ALKALINE PHOSPHATASE (LAP)	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, plasma **CONTAINER**: Green (Na Heparin) tube **WARD REMARK:** Schedule test with special coagulation and protect from light.
LIPASE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red –top tube, SST, or green PST (Li Heparin)
LITHIUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted. Collect specimen 12 hours after dose.
LIVER FUNCTION TEST	See Hepatic Function test
LUPUS ANTICOAGULANT	**DEPARTMENT:** Special Coagulation or Mail out **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, plasma **CONTAINER**: Light blue (3.2% Sodium Citrate) tube **WARD REMARK**: Collect 4 blue top tubes
Luteinizing Hormone (LH)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
LYMPH MARKERS	See T-Subsets
MAGNESIUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)

TEST NAME	REQUIREMENTS
MAGNESIUM, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER**: Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
MALARIA/BLOOD PARASITE EXAM	**DEPARTMENT:** Microbiology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA) **WARD REMARK:** Bring specimen to NMCP Specimen Processing within 30 minutes of collection. At Naval BMC & remote laboratories that refer to NMCP for testing, prepare 3 unstained peripheral blood smears (like differential) and 3 unstained slides with a thick drop in the center. Also submit a lavender tube with Potassium EDTA (K2 EDTA) for viral assay.
MATERNAL SERUM AFP SCREENING	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE:** 0.5 ml serum **CONTAINER:** Red-top tube or SST **WARD REMARK:** The maternal serum AFP test in pregnant women should be performed between 15.0 and 22.9 weeks gestational age, although the optimal period is 15.0 – 16.9 weeks. ***NOTE: The following data must be provided with the specimen in order to permit accurate interpretation of results: Date of collection, Patient's (maternal) date of birth, patient's estimated date of delivery, patient's weight, patient's race, patient's diabetic status (is patient insulin-dependent before pregnancy), number of fetuses, and whether this is a repeat sample.***
METANEPHRINES	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 24 hr urine **CONTAINER**: Brown urine container with 30ml 6N HCL. **WARD REMARK:** Obtain instructions and collection container from laboratory. Container must be labeled with patient's full name, date and time collection started and date & time collection finished. No caffeine before or during collection. Monamine oxidase inhibitors should be discontinued at least 1 week prior to beginning collection.
METHOTREXATE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted. Protect from light
Microalbumin/ Creatinine Ratio	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 1ml of random urine **CONTAINER**: Urine cup
Microalbumin (random or 24 hr Urine)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not

TEST NAME	REQUIREMENTS
	processed stat.
MONONUCLEOSIS SCREEN (MONOSPOT)	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 7ml serum or plasma **CONTAINER**: Lavender tube with Potassium EDTA (K2 EDTA) or red–top tube or SST
MUMPS TITER	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Red–top tube or SST
MYOGLOBIN, BLOOD	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma **CONTAINER**: Green PST (Li Heparin) only
MYOGLOBIN QUAL, URINE	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine, clean catch **CONTAINER**: Urine Cup
MYOGLOBIN QUANT, URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 7ml urine **CONTAINER**: Urine cup
NASAL EOSINOPHIL	See Eosinophil, Nasal
NEWBORN SCREEN	See EXPANDED STATE METABOLIC SCRN
OB SCREEN (PRENATAL SCREEN)	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **Comment:** Includes ABO-Rh and antibody screen, with antibody identification and titer, if applicable.
OSMOLALITY, SERUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
OSMOLALITY, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 4ml urine, clean catch. **CONTAINER:** Urine cup
PARTIAL THROMBOPLASTIN TIME-ACTIVATED (APTT)	See APTT
PHENOBARBITAL	**DEPARTMENT:** Mailout **SPECIMEN VOLUME & TYPE**: 1ml serum/plasma **CONTAINER:** Plain red or green top (Heparin) **WARD REMARK:** No gel tubes accepted. Collect specimen immediately before the next dose is given or at least 1HR after I.V. infusion is complete.
PHOSPHOROUS	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
PHOSPHOROUS, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container.

TEST NAME	REQUIREMENTS
	CONTAINER: Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
PLATELET AGGREGATION	**DEPARTMENT:** Mail out (CHKD) **WARD REMARK: Obtain form for NMCP Specimen Processing. HCP will complete the form and return it to the patient. Provider will call CHKD Special Coagulation Department at 668-9710 or 9706 for scheduling and referral**
PLATELET ANTIBODY CIRCULATING	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted.
PLATELET ASSOCIATED IGG	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 14 ml whole blood **CONTAINER:** 2 yellow (ACD) tubes **WARD REMARK:** Tubes must be signed, with date and time of collection. Test can only be drawn Mon, Tues, and Wed before 1300. Test can only be drawn at NMCP, FEVA, Boone, Oceana or Sewells pt.
PLATELET ANTIBODY PANEL	See Platelet Antibody circulating or Platelet Associated IGG
PLATELET COUNT	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
PLATELET FUNCTION ANALYSIS	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE:** Specimen tube capacity, plasma **CONTAINER:** Light Blue (3.2% Sodium Citrate) tube **WARD REMARK:** FULL TUBE REQUIRED **NOTE: Sample must be kept undisturbed at room temperature and must be tested within 4 hours after collection.**
POTASSIUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin) ***Attention Medical Provider – Reference Range and Specimen Type Notes on Potassium:*** *Plasma Potassium reference ranges may have a low bias where Potassium may be 0.1 to 0.6 mmol/Liter lower than the Serum value. Because of this difference, it may be prudent to use Plasma for Potassium and the panels.*
POTASSIUM, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
POTASSIUM HYDROXIDE WET MOUNT	**DEPARTMENT:** Microbiology **SPECIMEN VOLUME & TYPE**: Skin or nail scraping, or hair. **CONTAINER:** Sterile container.
PREALBUMIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma

TEST NAME	REQUIREMENTS
	CONTAINER: Red–top tube, SST, or green PST (Li Heparin)
PRENATAL SCREEN (OB SCREEN)	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **Comment:** Includes ABO-Rh and antibody screen, with antibody identification and titer, if applicable.
PRIMIDONE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** no gel tubes accepted.
PROCAINAMIDE (NAPA/PROCAINAMIDE)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted.
PROCALCITONIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma **CONTAINER:** PST green (Li Heparin) **WARD REMARK:** Test performed at NMCP Chemistry daily.
PROGESTERONE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or PST green (Li Heparin) **WARD REMARK:** Test performed at NMCP Chemistry daily.
PROLACTIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or PST green (Li Heparin) **WARD REMARK:** Transport to Lab immediately, do not use turbid specimens
PROSTATIC SPECIFIC ANTIGEN (PSA)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or PST green (Li Heparin) **WARD REMARK:** Test performed at NMCP Chemistry daily.
PROTAMINE SULFATE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: specimen tube capacity, plasma **CONTAINER:** light blue (3.2% Sodium Citrate) tube **WARD REMARK:** Consult required- schedule test with special coagulation.
PROTEIN ELECTROPHORESIS, CSF	See Cerebrospinal Fluid, Electrophoresis
PROTEIN ELECTROPHORESIS, SERUM	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 7ml serum **CONTAINER:** Red–top tube or SST **WARD REMARK**: Consult form required
PROTEIN ELECTROPHORESIS, URINE	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 10ml of 24hr urine only **CONTAINER**: Brown plastic urine container for 24 hour.
PROTEIN, TOTAL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)

TEST NAME	REQUIREMENTS
PROTEIN, TOTAL URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
PROTEIN C (IMMUNOLOGIC)	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, plasma **CONTAINER:** Light blue (3.2% Sodium Citrate) tube **WARD REMARK:** No anticoagulant meds for 2 weeks prior to this test
PROTEIN S (IMMUNOLOGIC)	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, plasma **CONTAINER:** Light blue (3.2% Sodium Citrate) tube **WARD REMARK:** No anticoagulant meds for 2 weeks prior to this test
PROTHROMBIN TIME (PT) & INR	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE:** Specimen tube capacity, plasma **CONTAINER:** Light Blue (3.2% Sodium Citrate) tube **WARD REMARK:** FULL TUBE REQUIRED **See specimen collection and handling requirements for coagulation testing.**
PSEUDOCHOLINEST-ERASE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
PTH, INTACT	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
PTH, INTRAOPERATIVE PANEL	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 4 ml plasma **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA) **WARD REMARK:** For lab use only - lab will order, pickup for surgical parathyroid removal, and result at end of procedure. Must be scheduled through Special Chemistry
QUINIDINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted. Recommended draw time is just prior to next dose.
RBC MORPHOLOGY	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
RENAL FUNCTION PANEL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or PST green (Li Heparin)
RETICULOCYTES	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
RHEUMATOID FACTOR (RA) SCREEN & QUANT	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma

TEST NAME	REQUIREMENTS
	CONTAINER: Red –top tube, SST, or green PST (Li Heparin)
RICKETTSIA AB PROFILE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
RISTOCETIN COFACTOR ASSAY	**DEPARTMENT:** Special Coagulation **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER**: 4 Light blue (3.2% Sodium Citrate) tubes **WARD REMARK:** CBC, PT, PTT, and Fibrinogen must be ordered with this test. 4 blue tops.
ROUTINE URINALYSIS	See Urinalysis
RPR-QUAL	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 5ml serum **CONTAINER:** Plain red **WARD REMARK:** Send to lab w/in 4 hrs of collection. Specimen is heat labile.
RPR-QUANT	**DEPARTMENT:** Serology **SPECIMEN VOLUME & TYPE**: 5ml serum **CONTAINER:** Plain red **WARD REMARK:** Send to lab w/in 4 hrs of collection. Specimen is heat labile.
RUBELLA VIRUS IGG, QUAL	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
RUBEOLA (MEASLES)	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
SALICYLATES	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted.
SEDIMENTATION RATE (WESTERGREEN)	See ESR
SGOT/AST	See Aspartate Aminotransferase
SGPT/ALT	See Alanine Aminotransferase
SICKLE CELL SCREEN	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: Specimen tube capacity, whole blood **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
SODIUM, SERUM	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER:** Red–top tube, SST, or green PST (Li Heparin)
SODIUM, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container. **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. No preservative needed. Keep on ice or refrigerated. 24 hour specimens not processed stat.
STREPTOZYME SCREEN	**DEPARTMENT:** Serology

TEST NAME	REQUIREMENTS
	SPECIMEN VOLUME & TYPE: 2ml serum **CONTAINER:** Red–top tube or SST **WARD REMARK**: indicate the organism needing the serum bactericidal titer; send specimen to lab w/in 30 minutes of collection
SUPPRESSOR CELLS CD8	See T-Subsets
SYNOVIAL FLUID COUNT	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE:** 3ml Synovial fluid **CONTAINER:** Lavender tube with Potassium EDTA (K2 EDTA)
T-SUBSETS (FLOWPNL)	**DEPARTMENT:** Flow Cytometry **SPECIMEN VOLUME & TYPE:** 4ml whole blood **CONTAINER:** 1 Lavender tube with Potassium EDTA (K2 EDTA)
T3 TRIIODOTHYRONINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST No turbid specimen **WARD REMARK:** Bring to lab within 1 hour of collection for specimen processing
T3 UPTAKE	See Thyroid panel
T4 THYROXINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST No turbid specimen
T7 (FT4)	See Thyroid panel
THYROID PANEL	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum No turbid specimen **CONTAINER:** Red–top tube or SST
THYROXINE BINDING GLOBULIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
TEGRETOL	See Carbamazepine
TESTOSTERONE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 7ml serum or plasma No turbid, no hemolysis **CONTAINER:** Red–top tube, SST, PST green (Li Heparin)
THEOPHYLLINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted. Collect specimen immediately before next dose is given
THROMBIN TIME	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE:** Specimen tube capacity, plasma **CONTAINER:** Light Blue (3.2% Sodium Citrate) tube **WARD REMARK:** FULL TUBE REQUIRED
TIBC (TOTAL IRON BINDING CAPACITY)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum only **CONTAINER**: Red–top tube or SST
TOBRAMYCIN	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 1ml serum/plasma **CONTAINER:** Plain red or green top (Heparin)

TEST NAME	REQUIREMENTS
	WARD REMARK: No gel tubes accepted. Pharmacology (dosage & time) sheet required. Peak specimens should be drawn 1hr after initiation of a 30 minute infusion or 30 minutes after the completion of longer infusions. Trough specimens should be drawn immediately prior to next dose.
TORCH-PRENETAL INFECTIOUS DISEASE AB	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
TOTAL EOSINOPHIL	See Eosinophil, total and absolute count
TOTAL PROTEIN	See Protein, total
TOXOPLASMA PANEL	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
TRICYCLIC ANTIDEPRESSANT SCRN,SERUM	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Plain red **WARD REMARK:** No gel tubes accepted.
TRICYCLIC ANTIDEPRESSANT SCRN,URINE	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: At least 50ml urine **CONTAINER**: Urine cup
TROPONIN I	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml plasma, no turbid specimens **CONTAINER:** Green PST (Li Heparin) only
TSH (3RD GENERATION ASSAY)	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2 ml serum No turbid specimen **CONTAINER:** Red–top tube or SST
TYPE & CROSSMATCH	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **WARD REMARK:** 6530/9 REQUEST FOR BLOOD PRODUCTS or Essentris blood note is required
TYPE & RH (ABO & RH)	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube
TYPE & SCREEN	**DEPARTMENT:** Blood bank **SPECIMEN VOLUME & TYPE**: 6ml whole blood **CONTAINER:** Pink with Potassium EDTA (K2 EDTA) or (K3 EDTA) tube **WARD REMARK:** 6530/9 REQUEST FOR BLOOD PRODUCTS or Essentris blood note is required
URIC ACID	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum or plasma **CONTAINER**: Red–top tube, SST, or green PST (Li Heparin)
URIC ACID, URINE	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 10 ml urine for random or 24hr urine container **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. No preservative for 24 hours

TEST NAME	REQUIREMENTS
	WARD REMARK: Obtain 24 hr collection container from laboratory services. Keep on ice or refrigerated. 24 hour specimens not processed stat.
URINALYSIS	**DEPARTMENT:** Hematology **SPECIMEN VOLUME & TYPE**: 20ml urine, clean catch. **CONTAINER**: Urine cup
URINE DRUG SCREEN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 25-50ml urine, clean catch. **CONTAINER**: Urine cup **WARD REMARK**: This test is for medical purposes only...no Legal chain of custody document is required! Bring to lab within 30 minutes of collection
URINE EOSINOPHIL	See Eosinophil, urine
URINE UREA NITROGEN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 25-50ml urine for random or 24hr urine container **CONTAINER:** Urine cup for random or brown plastic urine container for 24 hour. **WARD REMARK:** Obtain 24 hr collection container from laboratory services. Keep on ice or refrigerated. 24 hour specimens not processed stat.
VALPROIC ACID	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted. Pharmacology (dosage & time) sheet required. Peak specimens should be drawn 1 to 4hrs after dose was given. Trough specimens should be drawn immediately prior to the am dose.
VANCOMYCIN	**DEPARTMENT:** Chemistry **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER**: Plain red **WARD REMARK:** No gel tubes accepted. Pharmacology (dosage & time) sheet required. Peak specimens should be drawn 1hr after initiation of a 30 minute infusion or 30 minutes after the completion of longer infusions. Trough specimens should be drawn immediately prior to next dose.
VARICELLA ZOSTER	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
VDRL, CSF	See CEREBROSPINAL FLUID (CSF)VDRL
VDRL, SERUM	See RPR QUAL or RPR QUANT
VISCOCITY WHOLE BLOOD/SERUM	**DEPARTMENT:** Special Chemistry **SPECIMEN VOLUME & TYPE**: 7ml plasma or 7ml serum **CONTAINER**: Green (NA Heparin, Lithium Heparin)tube, SST or red **WARD REMARK:** Special chemistry must be notified before specimen is drawn
VITAMIN D	**DEPARTMENT:** Mail out **SPECIMEN VOLUME & TYPE**: 2ml serum **CONTAINER:** Red–top tube or SST
VWF ANTIGEN	See Ristocetin Cofactor
WEIL FELIX	See Rickettsia Ab Profile

II. COLLECTION OF BACTERIOLOGICAL SPECIMENS

A. Specimens submitted for bacteriological cultures should include source of specimen and, when appropriate, type of infection and/or organism expected on the specimen label or requisition including specific information regarding antibiotic therapy as indicated.
Specimens should be promptly delivered to the laboratory to ensure minimum delay and processing (e.g. CSF, wound cultures, anaerobes). To ensure safe handling of specimens submitted to the laboratory, specimens will be submitted in tightly sealed containers with no external spillage of specimen contents.

TEST NAME	REQUIREMENTS
ABSCESS (PUS)	**PREPARATION:** Clean and treat with antiseptic soap. **SPECIMEN VOLUME & TYPE:** Pus, More than 1ml **CONTAINER:** Syringe **TECHNIQUE:** Aspirate directly into syringe, remove needle. **INFO HELPFUL TO LAB**: Duration, Location
ABSCESS, DENTAL OR ROOT- SEE ORAL CAVITY	
AFB /MYCOBACTERIAL CULTURE	**SPECIMEN VOLUME & TYPE:** Specify AFB **CONTAINER:** Sterile container **COMMENT:** Collect 3 sputum specimens for acid-fast smears and culture in patients with clinical and chest x-ray findings compatible with tuberculosis. These three samples should be collected at 8-24 hour intervals (24 hours when possible) and should include at least one first morning specimen. Specimens must be delivered to the laboratory promptly; specimens that cannot be processed within one hour of the time of collection should be refrigerated during transport to and storage in the laboratory prior to processing. This will decrease overgrowth with contaminating organisms likely to be present.
BREAST MILK	**PREPARATION:** Skin decontamination of nipple and fingers **SPECIMEN VOLUME & TYPE**: 1-2 ml, Discard first ml **CONTAINER:** Sterile cup or tube **TECHNIQUE:** Sterile pump or manual expression **INFO HELPFUL TO LAB:** Suspected abscess
BODY FLUIDS - BLOOD, OTHER, JOINT	**PREPARATION:** Skin decontamination **SPECIMEN VOLUME & TYPE**: Several mls **CONTAINER:** Vacutainer, Sterile tube **TECHNIQUE:** sterile aspiration with syringe **INFO HELPFUL TO LAB:** History of trauma, previous surgery or infection, medication **CONTAINER:** Sterile cup or tube **TECHNIQUE:** Sterile pump or manual expression **INFO HELPFUL TO LAB:** Suspected abscess **COMMENT:** When in doubt, use an anticoagulant.
BLOOD CULTURES - SEE PROCEDURE FOR COLLECTING BLOOD CULTURES	

TEST NAME	REQUIREMENTS
CSF	**PREPARATION:** Skin decontamination **SPECIMEN VOLUME & TYPE**: 2 ml minimum **CONTAINER:** Sterile clean screw capped tube **TECHNIQUE:** Sterile Lumbar puncture; Ventricular suboccipital tap **INFO HELPFUL TO LAB:** Tentative clinical diagnosis **COMMENT:** Pool sediment of all tubes after cell count; pool supernatant for Chemistry and Serology. DO NOT REFRIGERATE. MAINTAIN AT ROOM TEMPERATURE PRIOR TO CULTURE. DELIVER TO LAB IMMEDIATELY.
EAR-EXTERNAL	**PREPARATION:** Cleanse external canal with mild soap. **SPECIMEN VOLUME & TYPE** Swab, scraping or fluid aspirate **CONTAINER:** Sterile tube, Swab with *TN. **TECHNIQUE:** Obtain specimen from active margin **INFO HELPFUL TO LAB:** Clinical suspicion **COMMENT:** Surface swabbing may miss Strep, Cellulitis or Erysipelas
EAR-INTERNAL	**PREPARATION:** Cleanse external canal with mild antiseptic soap. **SPECIMEN VOLUME & TYPE**: Swabs **CONTAINER:** Sterile clean tube, Swab with *TN **TECHNIQUE:** Collect specimen through sterile tunnel from eardrum or beyond. **INFO HELPFUL TO LAB:** History of acute or chronic Otitis Media **COMMENT:** Specimen should be collected by Provider.
EYE - EXTERNAL	**PREPARATION:** Cleanse skin around eye. Gently remove make-up and ointment with sterile cotton and saline. **SPECIMEN VOLUME & TYPE**: 2 Moistened Swabs **CONTAINER:** Moist sterile swabs and alcohol cleaned slides for Gram's stain **TECHNIQUE:** Swabbing - Pass each moistened swab 2 times over lower conjunctiva. Avoid eyelid, border, and lashes. **INFO HELPFUL TO LAB:** History, suspected problem, medication.
EYE -LID, BORDER	**PREPARATION:** Same as external **SPECIMEN VOLUME & TYPE**: Same as external **CONTAINER:** Same as external **TECHNIQUE:** Swabbing - Pass each moistened swab 2 times over eyelid border as indicated. Culture separately. **INFO HELPFUL TO LAB:** History, suspected problem

TEST NAME	REQUIREMENTS
FEMALE – VAGINA	**PREPARATION:** Use speculum without lubricant **SPECIMEN VOLUME & TYPE**: Aspirate or swab, gram stain, KOH Preparation **CONTAINER:** Swab with *TN **TECHNIQUE:** Simple aspiration, swabbing; swab mucosa high in vaginal canal **INFO HELPFUL TO LAB:** History of discharge **COMMENT:** Ulcerations should be checked for Syphilis. Yeast common. Saline - Yeast. KOH – Fungal. Follow recommendations for universal prenatal screening for vaginal and rectal Group B streptococci colonization of all pregnant women at 35-37 weeks of gestation. Optimum specimen for this test is a vaginal/rectal swab.
FUNGUS CULTURE	**SPECIMEN VOLUME & TYPE**: Specify fungus **CONTAINER:** Sterile container
INFLUENZA rRTPCR	**PREPARATION: None** **SPECIMEN:** **Nasal/Nasopharyngeal/Tracheal/Bronchoalveolar/Swabs/Wash/Aspirate** **CONTAINER: Sterile VTM tube.** **Remark: Specimens are to be collected on swabs with a synthetic tip (nylon, polyester, or dacron) and an aluminum or plastic shaft, and must be sent with the patient case form.**
VIRAL CULTURES – SEE PROCEDURE FOR COLLECTION OF VIRAL CULTURES	
FEMALE-URETHRA	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: Secretions for smear and culture **CONTAINER:** Sterile tube or swab with *TN **TECHNIQUE:** Digital massage through rectum **INFO HELPFUL TO LAB**: History of Chronic UTI **COMMENT:** Not recommended for GC cultures; useful in chronic UTI.
MALE – URETHRA	**PREPARATION:** Wipe clean with sterile gauze or swab. **SPECIMEN VOLUME & TYPE**: Urethral swab **CONTAINER:** Prefer direct planting onto *MTM and Chocolate slide (For Gram's stain) **TECHNIQUE:** Collect 2 - 4 HRS after urination with Urethral Alginate swab **INFO HELPFUL TO LAB:** History and duration of painful discharge **COMMENT:** Collect a slide for gram stain only.
INTESTINAL – DUODENAL CONTENTS	**PREPARATION:** Through NG Tube **SPECIMEN VOLUME & TYPE**: 2 - 4 ml **CONTAINER:** Sterile tube **TECHNIQUE:** Aspiration **INFO HELPFUL TO LAB:** Travel, food **COMMENT:** Examine for bacterial overgrowth, S. Typhi, parasites.
FECES	(SEE LAB DOC AC0013)
RECTAL SWAB	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: 3 Consecutive specimens **CONTAINER:** Swab with *TN **TECHNIQUE:** Swabs of lesions of rectal wall during Proctoscopy or Sigmoidoscopy preferred **INFO HELPFUL TO LAB:** Travel, food, suspected etiology **COMMENT:** Not useful for detection of carriers

TEST NAME	REQUIREMENTS
RSV	**PREPARATION: None** **SPECIMEN: Nasal Wash** **CONTAINER: Sterile screw cap cup** **WARD REMARK: RSV stored at room temperature ≤ 4 hours, up to 24 hours at 2-8 ºC**
GASTRIC ASPIRATE (NEONATAL)	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: 1-2 ml **CONTAINER:** Sterile container **TECHNIQUE:** Collected by provider **INFO HELPFUL TO LAB:** History of ruptured membranes
HAIR	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: Infected hair **CONTAINER:** Sterile container **TECHNIQUE:** Pluck infected hairs with sterile tweezers.
ORAL CAVITY – DENTAL OR ROOT ABSCESS	**PREPARATION:** Rinse mouth, prep with dry sterile gauze **SPECIMEN VOLUME & TYPE**: Exudate **CONTAINER:** Sterile syringe **TECHNIQUE:** Aspirate with needle and syringe **COMMENT:** Predominant pathogens are anaerobes
MUCOSA OR GUMS AND TEETH	**PREPARATION:** Rinse mouth **SPECIMEN VOLUME & TYPE**: Scraping swab **CONTAINER:** Swab **TECHNIQUE:** Use tongue depressor to contain tongue while culturing **INFO HELPFUL TO LAB:** Duration, agent suspected
NASOPHARYNX	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: Swab **CONTAINER:** Thin wire or flexible perinasal swab with *TN **TECHNIQUE:** Swab is passed through nose gently. Stay near septum and floor of nose and into nasopharynx. Rotate and remove. **INFO HELPFUL TO LAB:** Agent suspected **COMMENT:** Transport to lab immediately
NOSE	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: Swab **CONTAINER:** Swab with *TN **TECHNIQUE:** Insert swab about 1” into nose, gently rotate against nasal mucosa and remove **COMMENT:** Used mainly for Staph carriers
SPUTUM – EXPECTORATED DRAINAGE	**PREPARATION:** May require ultrasonic nebulization hydration, physiotherapy or postural **SPECIMEN VOLUME & TYPE**: Sputum (Not Saliva) 1-3 mL **CONTAINER:** Sterile specimen cup **TECHNIQUE:** Patient must cough deeply **INFO HELPFUL TO LAB:** Pneumonia, etc. **COMMENT:** May be refrigerated 12 hours

TEST NAME	REQUIREMENTS
THROAT / PHARYNX	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: Swab **CONTAINER:** Swab with *TN **TECHNIQUE:** Swab area of exudation, membrane formation, or inflammation. Rub tonsillar crypts vigorously. DO NOT TOUCH TEETH OR MOUTH SURFACES. **INFO HELPFUL TO LAB:** Suspected bacterial agent.
SKIN - BURN OR DECUBITI	**PREPARATION:** Clean wound surface with 70% Alcohol. **SPECIMEN VOLUME & TYPE**: 3 - 4 mm dermal punch **CONTAINER:** Sterile container **TECHNIQUE:** Punch biopsy
SKIN OR NAIL SCRAPINGS	**PREPARATION:** Clean wound surface with 70% Alcohol. **SPECIMEN VOLUME & TYPE**: Active edge of lesion or top of vesicle **CONTAINER:** Sterile container **TECHNIQUE:** Scraping with sterile instrument
RASH	**PREPARATION:** Clean rash surface with 70% Alcohol. **SPECIMEN VOLUME & TYPE**: Pus or fluid **CONTAINER:** Syringe **TECHNIQUE:** Direct syringe aspiration. Inject and aspirate 0.2 ml sterile saline
SUPERFICIAL WOUND	**PREPARATION:** Clean wound surface with 70% Alcohol. **SPECIMEN VOLUME & TYPE**: Pus, biopsy **CONTAINER:** Aspirate or swab in *TN **TECHNIQUE:** Swab or aspirate deep areas instead of lesion surface. **INFO HELPFUL TO LAB:** Animal bite or trauma, travel, duration of symptoms
SUPPURATIVE LESION OF CLOSED ABSCESS	**PREPARATION:** Clean and treat with antiseptic soap. **SPECIMEN VOLUME & TYPE**: More than 1 ml pus **CONTAINER:** Syringe or anaerobic container **TECHNIQUE:** Aspirate directly into syringe **INFO HELPFUL TO LAB:** Duration, location
SKIN – UMBILICUS	**PREPARATION:** No cleaning **SPECIMEN VOLUME & TYPE**: Swab **CONTAINER:** Swab with *TN **TECHNIQUE:** Swab area
URINE BLADDER (SUPRAPUBIC, CYSTOSCOPIC)	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: 1 ml urine **CONTAINER:** Sterile specimen cup **TECHNIQUE:** Collected by provider using needle aspiration or cystoscopy **COMMENT:** Must be plated within 2 hrs of collection or refrigerated
CATHETER OR ILEAL LOOP	**PREPARATION:** Disinfect tubing with alcohol **SPECIMEN VOLUME & TYPE**: 1 ml urine **CONTAINER:** Sterile specimen cup **TECHNIQUE:** Aspirate through tubing with syringe **COMMENT:** Must be plated within 2 HRS of collection or refrigerated
CATHETER TIPS	**PREPARATION:** None **SPECIMEN VOLUME & TYPE**: None **CONTAINER:** None **TECHNIQUE:** None

TEST NAME	REQUIREMENTS
	COMMENT: Recommended to check new unused lots
CLEAN VOIDED	**PREPARATION:** Instruct carefully: Early morning specimen **SPECIMEN VOLUME & TYPE**: 1 ml urine - 2 consecutive on females **CONTAINER:** Sterile, wide mouth specimen cup **TECHNIQUE:** Clean genital area well; void 20 - 25 mL into toilet, then collect without stopping the stream. **COMMENT:** DO NOT CULTURE 24 HR URINES. Urines must be planted within 2 hrs of collection or refrigerated.

LEGEND OF ABBREVIATIONS:

***TN** - TRANSPORT MEDIA
GC - NEISSERIA GONORRHOEAE
UTI - URINARY TRACT INFECTION
NSU - NON SPECIFIC URETHRITIS

III. COLLECTION PROCEDURE FOR GC/CHLAMYDIA DNA PROBE:

A. **Instructions for collection**:

1. **Endocervical swab specimens:**

a. Remove excess mucus from the cervical os and surrounding mucosa using the cleaning swab (white shaft swab in the package with red printing). **Discard this swab.**

b. Insert the specimen collection swab (blue shaft swab in the package with green printing) into the endocervical canal.

c. Gently rotate the swab clockwise for 10 to 30 seconds in the endocervical canal to ensure adequate sampling.

d. Withdraw the swab carefully; avoid any contact with the vaginal mucosa.

e. Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the transport tube.

f. Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.

g. Re-cap the swab specimen transport tube tightly.

2. **Male urethral swab specimens:**

a. The patient should not have urinated for at least one hour prior to specimen collection.

b. Insert the specimen collection swab (blue shaft swab in the package with the green printing) 2 to 4 cm into the urethra.

c. Gently rotate the swab clockwise for 2 to 3 seconds in the urethra to ensure adequate sampling.

d. Withdraw the swab carefully.

e. Remove the cap from the swab specimen transport tube and immediately place the specimen collection swab into the specimen transport tube.

f. Carefully break the swab shaft at the scoreline; use care to avoid splashing of the contents.

g. Re-cap the swab specimen transport tube tightly.

3. Urine specimens:

a. The patient should not have urinated for at least one hour prior to specimen collection.

b. Direct patient to provide a first-catch urine (approximately 20 to 30 mL of the initial urine stream) into a urine collection cup free of any preservatives. Collection of larger volumes of urine may result in specimen dilution that may reduce test sensitivity. Female patients should not cleanse the labial area prior to providing the specimen.

c. Remove the cap and transfer 2 mL of urine into the urine specimen transport tube using the disposable pipette provided. The correct volume of urine has been added when the fluid level is between the black fill lines on the urine transport tube label.

d. Re-cap the urine specimen transport tube tightly. This is now known as the *processed urine specimen*.

B. **Specimen transport and storage before testing:**

1. **Swab specimens:**

After collection, transport and store the swab in the swab specimen transport tube at 2° to 30°C until tested. Specimens must be assayed with the APTIMA Combo 2 Assay within 60 days of collection. If longer storage is needed, freeze at -20° to -70°C for up to 90 days after collection.

2. **Urine specimens:**

a. After collection, transport the processed urine specimens in the GEN-PROBE APTIMA Combo 2 urine specimen transport tube and store at 2° to 30°C until tested. Processed urine specimens should be assayed with the APTIMA Combo 2 Assay within 30 days of collection. If longer storage is needed, freeze at -20° to -70°C for up to 90 days after collection.

b. Urine samples that are still in the primary collection container must be transported to the lab at 2° to 30°C within 24 hours. Transfer the urine sample into the APTIMA Gen-probe urine specimen transport tube within 24 hours of collection. Store at 2° to 30°C and test within 30 days of collection.

STAT TESTING AVAILABLE FROM NMCP LABORATORY SERVICES

I. POLICY:

STAT testing should only be utilized in critical situations. The following procedures are offered on a STAT basis. Any requests for procedures not listed must be approved by a staff pathologist.

II. CHEMISTRY:

Ammonia	**Ketones**
Amylase	**Lithium**
Acetaminophen	**Magnesium**
BMP	**Neonatal Bilirubin**
BNP	**Phenobarbital**
BUN	**Phenytoin**
Calcium	**Phosphorous**
Carbamazepine	**Quantitative HCG**
CK/MB	**Salicylates**
Creatinine	**Theophylline**
CSF Protein, Total	**Troponin 1**
CSF Glucose	**UDS**
Digoxin	**Valproic Acid**
Electrolytes	**Vancomycin**
Chloride	**Gentamicin**
CO2	**Glucose**
Potassium	**Ionized Calcium**
Sodium	

III. HEMATOLOGY:

Body Fluid Cell Counts	**Monospot**
CBC	**PT-INR/APTT**
Hemoglobin/Hematocrit	**Qualitative HCG**
Platelet	**Sickle Screen**
D-Dimer	**Urinalysis with Microscopic**
Fetal Fibronectin	**Fibrinogen**

IV. MICROBIOLOGY:

CSF Gram Stain	**Any Gram Stain from Surgery**

V. TRANSFUSION SERVICE:

See 6530.4 for information

COMMUNICATING CRITICAL TEST RESULTS & VALUES

I. PURPOSE:

To outline the identified department specific critical values, critical tests, the responsibilities, and procedures for reporting of critical tests and critical results to the health care providers (HCP) in a timely manner.

II. CRITICAL VALUES:

The following tests and result limits are defined as critical values for the Laboratory and approved by the ECOMS.

CHEMISTRY		
TEST	**CRITICAL LOW** **Less than or equal to:**	**CRITICAL HIGH** **Greater than or equal to:**
BUN	N/A	80 mg/dL
Pro-BNP	N/A	1000 pg/mL
Calcium, ionized	0.86 mmol/L	1.74 mmol/L
Calcium, serum	6.5 mg/dL	13.0 mg/dL
Creatinine ≥16 years old	N/A	5.0 mg/dL
Creatinine <16 years old	N/A	2.5 mg/dL
Neonatal Bilirubin	N/A	15.0 mg/dL
Total Bilirubin	N/A	15.0 mg/dL
Glucose	40 mg/dL	400 mg/dL
Neonatal Glucose	40 mg/dL	300 mg/dL
CSF Glucose (adult)	40 mg/dl	N/A
CSF Glucose (neonatal)	30 mg/dl	N/A
Lactic Acid	N/A	2.9 mmol/L
Magnesium	1.0 mg/dl	5.0 mg/dl
Potassium	2.8 mmol/L	6.0 mmol/L
Neonatal Potassium	3.0 mmol/L	6.0 mmol/L
Sodium	125 mmol/L	160 mmol/L
Carbon Dioxide	10 mmol/L	40 mmol/L
Neonatal Carbon Dioxide	13 mmol/L	40 mmol/L
Phosphorous	2.0 mg/dL	N/A
Troponin I	N/A	0.12 ng/mL

THERAPEUTIC DRUG MONITORING		
TEST	CRITICAL LOW Less than or equal to:	CRITICAL HIGH Greater than or equal to:
Acetaminophen	N/A	50 mcg/mL
Carbamazepine	N/A	15 mcg/mL
Digoxin	N/A	2.2 ng/mL
Phenytoin (Dilantin)	N/A	30.0 mcg/mL
Lithium	N/A	1.9 mmol/L
Phenobarbital	N/A	44.0 mcg/mL
Salicylate	N/A	29 mg/dL
Theophylline	N/A	20 mcg/mL
Valproic Acid	N/A	120 mcg/mL
Gentamicin (trough)	N/A	1.9 mcg/mL (trough)
Gentamicin (peak)	N/A	11.9 mcg/mL (peak)
Vancomycin (trough)	N/A	20.0 mcg/mL (trough)
Vancomycin (peak)	N/A	44.9 mcg/mL (peak)
HEMATOLOGY		
AGE RANGE	CRITICAL LOW Less than or equal to:	CRITICAL HIGH Greater than or equal to:
WBC		
Newborn thru 18 years	2.0 mm3	35.0 mm3
Adult (19 years and above)	1.5 mm3	35.0 mm3
HEMOGLOBIN		
Newborn thru 180 days	9.0 g/dL	27.0 g/dL
181 days thru Adult	7.0 g/dL	21.0 g/dL
HEMATOCRIT		
Newborn thru Adult	20.00%	60.00%
Platelets	60,000/mm3	800,000/mm3
PERIPHERAL BLOOD SMEAR		
Parasites	ANY OBSERVED PARASITES	
WBC	ANY OBSERVED BLASTS	
CSF	ANY OBSERVED BACTERIA AND/OR YEAST	

COAGULATION

TEST	CRITICAL LOW Less than or equal to:	CRITICAL HIGH Greater than or equal to:
Prothrombin Time	N/A	60 sec
INR	N/A	4.5
PTT	N/A	150 sec
Fibrinogen	60 mg/dL	700 mg/dL

URINALYSIS

TEST	CRITICAL LOW Less than or equal to:	CRITICAL HIGH Greater than or equal to:
Glucose	N/A	500 mg/dL
Ketones	N/A	80 mg/dL
Gastric Occult Blood	Positive	

RESPIRATORY THERAPY

TEST/SPECIMEN SOURCE	CRITICAL LOW Less than or equal to:	CRITICAL HIGH Greater than or equal to:
PCO_2 – Arterial	21	69
PCO_2 – Venous	11	69
PCO_2 – Capillary	15	70
PCO_2 – Mixed Venous	11	69
pH – All Sources	7.22	7.59
PO_2 – Arterial	51	N/A
PO_2 – Venous	16	N/A
sO_2	76	N/A
Sodium	125	160
Potassium	3.0	6.0
Ionized Calcium	0.86	1.74
Chloride	N/A	N/A
Glucose	40	400
Lactate	N/A	2.9
Hemoglobin	9	22
Hematocrit	20	60
Carboxyhemoglobin	N/A	20

MICROBIOLOGY	
TEST or CULTURE	CRITICAL RESULT
Blood Cultures	All Positive Cultures
Respiratory Cultures	Multi-drug resistant *S. aureus*, and/or *Pseudomonas aeruginosa* and/or Burkholderia cepacia from a Cystic Fibrosis patient.
Any Culture/Any Source	Any multi-drug resistant *Acinetobacter spp.*
	All Specimen Sources - VRE (Vancomycin Resistant Enterococcus)
	Any Select Agent as described in the Laboratory Response Network (LRN) plan and VA State Lab Reportable List
CSF Cultures	All Positive Cultures
Eye Cultures	Pseudomonas Species, Enterococcus
Urine/Wound Cultures	Group A Streptococcus
CSF Gram Stain	Positive Results
Synovial Fluid Gram Stain	Positive Results
Operating Room Gram Stain	Positive Results
Fecal Cultures	All fecal enteric pathogens isolated
All Cultures with source other than Throat	All positive cultures with Grp. A Strep
AFB Smear	Any Source - All POSITIVE AFB SMEARS
HSV Cultures	All Positive HSV cultures on CSF or Pediatric samples
PCR Testing	All Positive Results
BLOOD BANK	
TEST	CRITICAL RESULT
Antibody Screen IAT	Positive
Antibody Screen DAT	Positive
Crossmatch	Incompatible
Rh positive cord blood with Rh negative mother	Mother candidate for RhIg
ANATOMIC PATHOLOGY*	
DEPARTMENT	DIAGNOSIS
Dermatology	Malignant Melanoma
ENT	Any Malignancy
Gastroenterology	Any Malignancy Any flat dysplasia in a patient with chronic colitis
General Surgery	Any Malignancy
Family Practice	Malignant Melanoma

	Cervical Carcinoma
Neurology	Malignancy CSF Cytology
Neurosurgery	Any Neoplasm except lipomas All Stereostatic Biopsy results
OB/Gyn	Any Malignancy
Orthopedics	Any Malignancy
Ophthalmology	Any Malignancy Giant Cell Arteritis
Oral Surgery	Any Malignancy
Plastic Surgery	Any Malignancy
Pulmonary Medicine	Any Malignancy Presence of Pneumocystis or AFB
Urology	Any Malignancy
Thoracic and Vascular Surgery	Any Malignancy Disagreement between Frozen Section and Final Diagnosis

*Although these values for Anatomic Pathology are listed as critical, they are not time critical, but must be called back after diagnosis is confirmed and documented in the COPATH report.

POINT OF CARE TESTING

Test	Critical Low	Critical High
ACCU-CHEK INFORM: GLUCOSE 31 Day-Adult	Less than or equal to 40 mg/dL	Greater than or equal to 400 mg/dL
ACCU-CHEK INFORM: GLUCOSE: Newborn-30 days	Less than or equal to 40 mg/dL	Greater than or equal to 300 mg/dL
Fecal Occult Blood	POSITIVE	
Rapid Strep	POSITIVE	
HCG	Unknown Positive In a Pre-Op Patient	
Provider Performed Microscopy (PPM)	Determined by Provider	
Urinalysis: Ketones &Glucose ✳Adults only and only if both elevated (Ketones & Glucose)	N/A	Greater than or equal to 80 mg/dL
	N/A	Greater than or equal to 500 mg/dL
Activated Clotting Time	Clinic/Procedure Specific	

I-STAT		
Test	Less than or equal to	Greater than or equal to
Sodium	125 mmol/L	160 mmol/L
Potassium	2.8 mmol/L	6.0 mmol/L
Ionized Calcium	0.86 mmol/L	1.74 mmol/L
Test	Less than or equal to	Greater than or equal to
pH	LESS THAN 7.20	N/A
PCO_2	N/A	Greater than 60 mm Hg
PO_2	Less than 40 mm Hg	N/A
Hematocrit	20%	60%
TCO_2	10 mmol/L	40 mmol/L
Creatinine	N/A	Greater Than 5.0 mg/dL
Glucose	40 mg/dl	400 mg/dL
Urea Nitrogen	N/A	80 mg/dL
Hemoglobin	7 g/dL	20 g/dL
Troponin (cTnI)	N/A	0.12 ng/ml
AVOX		
Oxyhemoglobin	Oxyhemoglobin critical values are determined on a case by case basis by the cardiologist performing the catheterization.	

III. CRITICAL TESTS:

The following tests are defined as critical tests for the Laboratory:

CRITICAL TESTS (All results reported as critical whether normal or abnormal)
Intra-operative PTH
Intra-operative Frozen Sections
Fetal Fibronectin
Rapid HIV

IV. TIMELINESS OF REPORTING CRITICAL TESTS & CRITICAL VALUES:

A. The TAT for all critical values is **Sixty (60) minutes**.

1. The defined TAT for critical value is from the time the result is recognized as critical and validated to the time the HCP is notified of the results.

B. The current defined critical tests monitors and turnaround times (TAT) are as follows:

TEST NAME	TAT
Intra-op frozen section	35 minutes
Intra-op PTH	30 minutes
Fetal Fibronectin	2 hours (120 minutes)
Rapid HIV	1 hour (60 minutes)

1. The defined TAT for a critical test is from the time test is ordered to the time the HCP is notified of the results, whether positive, negative, critical, or normal.

V. Reporting Results:

A. Reporting critical values/tests will include a verification "read-back" by the person receiving the results. The verification "read-back" policy is required for all critical reports that are communicated verbally or by telephone.

B. Be prepared to provide additional information to duty health care provider such as a home telephone number of the patient for whom we are calling the result, and DOB if asked, by using ^MRG in CHCS.

C. Inpatients:

When a critical value/test is identified, those results will be communicated to the ordering physician/provider, designee, or the nurse on the appropriate patient care unit, via direct verbal communication (in person or by telephone).

D. Outpatients:

During normal working hours clinically relevant critical results/tests, will be called to the responsible physician/provider or designee. During non-working hours critical results/tests ordered at branch clinics or NMCP Family Practice Clinic, will be called to the On-Call Family Practice Provider.

E. Notification sequence:

The following priority sequence (approved by ECOMS) is used when calling Critical Values/Tests or other required telephone test reports. This will be followed until one of the listed health care professionals is contacted. The same procedure will be used when a critical value is received from a Reference Laboratory.

a. Inpatient:

1) (Ordering) health care provider or designee*

2) Requesting location charge nurse/floor supervisor

3) Duty medical officer covering the requesting location.

b. Outpatient:

1) Page responsible (Ordering) health care provider or designee*

2) Duty medical officer covering the requesting location.

***Designee includes residents, interns, and charge nurses.**

F. When the patient's responsible HCP is not available, utilize the notification sequence listed above (E).

G. Make each subsequent attempt within approximately ten (10) minutes of previous unsuccessful call. Continue to page and follow the sequence listed above until the responsible HCP/designee is contacted. If unable to contact anyone, the results will be given to the duty pathologist for action. Completely document every call in a Critical Result/Tests Log book, worksheet or instrument report print out.

H. Emergency Department Alternate number:

The ED provided the Laboratory with an alternate number to call in the event that main number is busy or the tech is put on hold for an excessive period.

a. If the primary ED number 3-1365 is busy, the tech is to contact the triage desk 3-7219 with critical values/tests.

b. Request to speak to the triage nurse, and then give the critical value/test information to the triage nurse.

c. The triage nurse will contact the on-duty staff physicians with the results.

VI. BHCs HOURS OF OPERATIONS:

Reporting critical values/tests to the Branch Clinics, Langley AFB, FT Eustis or Ft. Lee after normal hours of operation, notify the listed contact phone.

Facility	Hours of Operation	Laboratory Phone Number	After hours phone number
Branch Health Clinic Dam Neck	0700-1530 M-F Closed Group A & B	953-9879	628-8805 Answering service will page Family Practice HCP on call
Branch Health Clinic Norfolk (Sewell's Point)	0700–1530 M-F Closed Group A & B	953-8958	628-8805 Answering service will page Family Practice HCP on call.
Ft Eustis (McDonald Army Health Center)	0730-1900 M-F 0800-1700 Sat-Sun Closed Group A & B	314-7580	757-508-2949 AOD will provider number to the on-call doctor who will then call us back.
Ft Lee (Kenner Army Health Center)	0700-1600 M-F Closed Group A & B	Commercial: 804-734-9106, 804-734-9110, 804-734-9113, 804-734-9105; DSN Prefix:687	804-734-9000 AIO will call HCP who will call us back
Langley Air Force Base (First Medical Group Hospital)	Monday-Sunday 0700-1630 Closed Group A & B	764-6925	Call Laboratory, if no answer call Langley ER 764-6800. Have the ER contact the Duty Laboratory Technician to call the NMCP Laboratory.
Naval Weapons Station, Yorktown	0700-1530 M-F Closed Group A & B	953-8440	628-8805 Answering service will page Family Practice HCP on call.

Facility	Hours of Operation	Laboratory Phone Number	After hours phone number
Branch Health Clinic Boone	0700-1900 Sun-Tues 0830-1900 Wed 0700-1900 Thurs-Sat Group A – 0700-1900 Closed Group B	953-8219	628-8805 Answering service will page Family Practice HCP on call
TRICARE Prime Clinic Chesapeake	0700-1900 Mon-Wed 0700-1900 Thurs 0700-1900 Fri-Sat Group A – 0700-1900 Closed Group B	953-6323 953-6324 Nurses: 3-6354,6355,6356	628-8805 Answering service will page Family Practice HCP on call
Branch Health Clinic Northwest	0645-1530 M-F Closed Group A & B	953-6284	628-8805 Answering service will page Family Practice HCP on call
Branch Health Clinic, NAS Oceana	0700-1900 M-F Closed Group A & B	953-3827 Nurses: 953-3852	628-8805 Answering service will page Family Practice HCP on call
TRICARE Prime Clinic Virginia Beach	0700-1900 Monday-Sunday 0700-1900 Sat-Sun Group A 0900-1700 Sat-Sun Group B	953-6680 953-6681 Nurses: 953-6672 953-6673	628-8805 Answering service will page Family Practice HCP on call
Branch Health Clinic NNSY	0700-1530 M-F Closed Group A & B The specimen processing area closes at 1400.	953-6480 953-6454: Primary Care 953-6478: Acute Care	544-4437 Duty HM will notify the requesting provider 988-9403 CDO pager

Group A- Martin Luther King, President's Day, Columbus Day & Veteran's Day

Group B- Thanksgiving, Christmas, New Year's, Memorial Day, Labor Day, and Independence Day

SPECIMEN SUBMISSION FOR HIV TESTING

I. BACKGROUND:

A. Four categories of specimens are routinely submitted for the testing of HIV:

1. Category 1: Samples submitted for BUMED Navy wide HIV Program (Force Testing) for active duty personnel assigned to Navy commands within Naval Medical Center Portsmouth's area of responsibility:

a. Ships/Outlying Commands

b. Naval Medical Center Portsmouth

2. Category 2: Patient specimens (active duty, dependent, retired) from Naval Medical Center Portsmouth (NMCP) inpatient wards and outpatient clinics.

3. Category 3: Patient specimens from Branch Health Clinics.

4. Category 4: Specimens submitted from Occupational Health for Needlestick protocol initial testing on the source and staff and smallpox immunizations, Emergency Medicine Department (Needlestick protocol initial testing on the source and OB patients who are delivering and have not had an HIV test performed); Labor and Delivery for suspect HIV positive mother.

B. Specimens falling under Categories 1, 2, and 3 above will be shipped to the Navy HIV Contract Laboratory (Center for Disease Detection Laboratory or CDD). Specimens in Category 4 above are tested in-house using the Oraquick Rapid HIV test kit. Positive category 4 samples are automatically sent to Navy HIV Contract Laboratory (CDD) for confirmatory testing.

II. SPECIMEN SUBMISSION:

A. Category 1 Specimen Submission (Force Testing) Ships/Outlying Commands

1. Specimens can be submitted by ordering tests in CHCS (if available) or on a SAMS using HMSLoader. Detailed instructions for submission can be obtained by contacting the HIV referral section of the Laboratory at (757)953-1594.

2. Supplies required for collection and submission of HIV samples;

a. 7mL, plastic, barrier-gel collection tubes (Red/Yellow tops)

b. Vacutainer Holders

c. SAMS Program (version 08.03.02 only).

d. 3 ½" computer disks or CD.

3. The following information is required on each specimen tube and must be LEGIBLE:

a. Last Name

b. First Name

c. Family Member Prefix/ Sponsor SSN

d. Date of Birth

4. Specimen must be processed within 6 hours of collection as follows:
Allow the specimens to clot for at least 30 minutes. Centrifuge the specimens at 1100 – 1300 g for a minimum of 10 minutes.

5. ***Submission using SAMS:***

a. For submission using SAMS, place tubes in the same order as on the disc. Enclose a printed copy of the roster at the time of submission and ensure that the printed copy, disc and specimens are all in the same order. Upon submission, the draw date must be within 7 days to avoid rejection.

b. All sample information MUST be correct (on tube and computerized roster) to avoid delays in processing.

c. Ensure barcodes are placed on the top third of the tube. The numbers should be vertical.

d. Source of Test Code for Category 1 specimens will be "F" for general testing.

e. Samples may be delivered to NMCP HIV section from 0700 to 1330 Monday through Friday.

f. Results

1) Final test results will be individual and summary report on a PDF format to be returned to submitting activities via 3 ½" computer disk or CD.

2) Reprints of results can be obtained by e-mailing Navy Central HIV Program Office at NCHP@ med.navy.mil.

3) Results WILL NOT be faxed or given via the telephone.

6. ***Submission using CHCS:***

a. Submitting sites can order HIV tests in CHCS as HIV1/0/2. Specimens will be accessioned and labeled by submitting site staff.

b. Supplies required for collection and submission of HIV specimens;

1) 7ml, plastic, barrier-gel serum separator tubes (Red/ yellow)

2) Vacutainer Holders

c. The following information is required on each specimen tube and must be LEGIBLE:

1) Last Name

2) First Name

3) Family Member Prefix/Sponsor SSN

4) Date of Birth

d. All sample information MUST be correct (on tube and in CHCS) to avoid delays in processing.

e. Results

Results will be available to the ordering official in CHCS.

B. Category 2 Specimen Submission - NMCP Patients

1. Specimens must be ordered in CHCS under HIV1/O/2. A printout of the order must accompany the specimen to the Specimen Processing section of the Laboratory.

a. The specimen should be submitted in 7ml, plastic, barrier-gel serum separator tubes (Red/Yellow).

2. All sample information MUST be correct (on tube and in CHCS) to avoid delays in processing or resubmission of specimens.

3. The following information is required on each specimen tube and must be LEGIBLE:

a. Last Name

b. First Name

c. Family Member Prefix/Sponsor SSN

d. Date of Birth

e. Ward/Clinic

4. Source Test Code for samples ordered in CHCS maybe:

a. ETOH/Drug Rehab

b. Blood Donor

c. Referred HIV Contact
d. Deceased (Whether DOA or Dying in ER)
e. MEPCOM
f. Force Screening
g. BUMED Use Only
h. Post-Deployment Serum Storage
i. Clinically Indicated
j. Prisoners or Detained Persons
k. Medical Admissions (Including Psych.)
l. Pre-Deployment Air Force/Army/Navy
m. OB/GYN
n. Physical Exam
o. Evaluation Unit Patient
p. Requested by Individual
q. Surgical Admission
r. Post-Deployment Air Force
s. STD Clinic Visit
t. Double Elisa Pos, Conf. BB Unit only
u. Any other test or source
v. Redrawn (Double Elisa Pos) Pt/Clinical

5. The specimens will be accessioned to the N22 accession area by the Specimen Processing section of the Laboratory.

6. All HIV results entered into the CHCS system are protected. A special code assigned by MID or the CHCS system manager must be in place in order to view or retrieve these results. Authorization for this code is limited to Mail-outs/HIV section staff, isolated health care practitioners who have a need to know, and staff physicians. Contact the Client Services supervisor or the Mail-outs/HIV section for any questions regarding this policy.

7. RESULTS WILL NOT BE GIVEN TO THE PATIENT, FAXED, OR GIVEN OVER THE PHONE. All reprint requests for HIV results should be directed to the HIV/Mail-outs section of the Laboratory.

C. Category 3 Specimen Submission: Branch Clinics

1. Specimens will be submitted to the Specimen Processing Branch of the Laboratory via CHCS transmittal list.

a. A copy of the transmittal list is required for sample submission.
b. Ensure the transmittal list has been sent electronically in CHCS.
c. Ensure the specimens are in the transmittal list order.
d. If an accession needs to be cancelled for any reason, please annotate on the transmittal list and staff will cancel the appropriate test.

D. Category 4 Specimen Submission: Occupational Health/Emergency Room Needlestick Protocol/Labor and Delivery/OB

1. Specimens must be ordered in CHCS under HIV-1+2 AB.

a. A printout of the order must accompany the specimen to the Specimen Processing branch of the Laboratory.

b. Ensure that NEEDLESTICK is annotated on the CHCS printout or on the CONSENT FORM. If this is not clearly indicated, the specimen will be sent to CDD as a Mail-out test.

c. The specimen should be submitted in 5 ml lavender tube with Potassium EDTA (K2 EDTA).

2. All sample information MUST be correct (on tube and in CHCS) to avoid delays in processing or resubmission of specimens.

3. The following information is required on each specimen tube and must be LEGIBLE:

a. Last Name

b. First Name

c. Family Member Prefix/Sponsor SNN

d. Date of Birth

e. Ward/Clinic

4. Source Test Code for Category 4 specimens may be:

a. O OB/GYN

b. X Any other test or source

5. The specimens will be accessioned to the PHE accession area by the Specimen Processing section of the Laboratory.

III. RESULTS REPORTING:

A. Once positive result is confirmed, Navy Central HIV Program will perform the following.

1. For active duty member:

a. Notify HIV POC to hold barcode via email.

b. Notify CO of active duty member.

c. Once the CO is notified, NCHP will notify HIV POC to release barcode.

d. HIV POC will then certify the result in CHCS and acknowledge NCHP's email that the result has been released.

2. For retired members and dependents:

a. NCHP will notify HIV POC via email to forward hardcopy result to Health Care Provider.

b. HIV POC will acknowledge NCHP's email that hardcopy result has been forwarded to HCP and the result will be certified in CHCS.

B. All HIV results entered into the CHCS system are protected. A special code assigned by MID or the CHCS system manager must be in place in order to view or retrieve these results. Authorization for this code is limited to Mail-outs/HIV Section staff, isolated health care practitioners who have a need to know, and staff physicians. Contact the HIV section staff for any questions regarding this policy.

C. RESULTS WILL NOT BE GIVEN TO THE PATIENT, FAXED OR GIVEN OVER THE PHONE. All reprint requests for HIV results should be directed to the HIV/Mail-outs section of the Laboratory.

IV. NOTES:

A. For specimen categories 1-3: Specimens that cannot be delivered to CDD Laboratory within 7 days of collection must be transferred to the 5.0 ml screw-cap collection tubes and frozen (-20 C).

B. There are instances that specimens will be rejected (i.e., gross hemolysis, identification problems, leakage during transport, quantity not sufficient, unscannable barcodes).

C. In the event that a specimen is rejected, a comment will be placed in CHCS.

V. **REFERENCES:**

A. Navy HIV Program SOP, JUN 95

B. SECNAVINST 5300.30C

C. Center for Disease Detection SOP, Oct 2008

LEGAL ALCOHOL, TOXICOLOGY SPECIMEN SUBMISSION AND PATERNITY TESTING

I. PURPOSE

To establish policy and procedures governing the proper submission of specimens for legal alcohol and toxicology testing.

II. TOXICOLOGY EXAMINATION- REQUEST AND REPORT (AFIP Form 1323)

A. AFIP Form 1323 must accompany all requests for legal toxicology examinations to ensure that specimens resulting from legal investigations are handled as evidence. A continuous chain-of-custody and positive identification of samples are imperative.

B. The Laboratory accepts specimens for legal toxicology. All specimens will be submitted directly to:

Division of Forensic Toxicology
Building 115 Purple Heart Drive
Dover AFB, DE 19902

NOTE: The Laboratory **does not collect urine specimens for legal purposes or for active duty drug screening programs.** Such specimens are the responsibility of a Command's Drug Screening Program official.

III. SUBMISSION OF LEGAL ALCOHOL SPECIMENS

A. The Laboratory at Naval Medical Center, Portsmouth, Virginia performs blood alcohol determinations for **medical or administrative purposes only.** This laboratory does not use an ethanol test methodology that is specific for legal use. Therefore, any blood alcohol levels which may be used in court proceedings (civil court or court martial) must be submitted with a chain-of-custody document and will be mailed to the appropriate testing facility.

B. All legal alcohol specimens must have two gray top tubes (NaFl anticoagulant) submitted with the completed DD 1323 and sealed in an appropriate container. All blocks must be completed.

C. Collection of the legal alcohol can be performed by the Laboratory as requested. During working hours, refer persons to Outpatient Phlebotomy. After working hours, refer the persons to the Senior Laboratory Technician. Persons are to be escorted by the requesting command officials or NMCP Security and are to remain until specimen collection is completed. The requesting/submitting command, or location, is to have the appropriate written authorization (AFMES 1323 Form) from command authorities. The chain of custody begins with the person who draws the blood.

PATERNITY/FORENSIC TESTING

A. Paternity testing is **not** available at the Naval Medical Center, Portsmouth. If a beneficiary needs assistance collecting samples for a prepackaged paternity sample collection kit, the laboratory staff will follow the manufacturer's instructions and any additional instructions that are included in the collection kit. At no time will a staff member sign a chain of custody form or arrange for shipping of the kit. Patients may also be advised to contact a local LabCorp (or other commercial lab) to arrange an appointment for paternity studies. This testing will be at the patient's expense.

B. A Forensic Pathologist from Office of Armed Forces Forensic Medical Examiners performs autopsies on site and may collect DNA samples for remains identification. These samples are sent for testing to:

Division of Forensic Testing
Building 115 Purple Heart Drive
Dover AFB, DE 19902

PATIENT LABORATORY REPORTS

I. Upon completion, all laboratory studies will be certified in CHCS by an appropriate member of the laboratory staff. Authorized health care providers may access all lab results on line in CHCS and print these reports if desired.

Outpatient or off site requests for hard copy results may be submitted to the Medical Records department for processing.

II. Civilian health care providers not credentialed at Naval Medical Center, Portsmouth requesting a laboratory report ordered by a military health care provider must fax a completed patient medical records release form signed by the patient to 953-6660.

BLOOD SPECIMEN COLLECTION BY VENIPUNCTURE

I. PRINCIPLE:

A. To obtain blood for analysis by vacutainer or syringe methods. Glass/plastic tubes under specified vacuum allow predetermined volumes (2mL, 3mL, 4mL, 5mL, 7mL, and 10mL) to enter the tubes while syringe collection methods allow volumes to be collected according to the syringe volume and pressure that is adjustable by the phlebotomist.

II. REAGENTS, SUPPLIES & EQUIPMENT

A. Vinyl or Nitryl gloves (Latex free)

B. Phlebotomy Needles

1. Needle gauge selection is based upon the patient's physical characteristics.

2. Since the larger the number, the smaller the bore size, the larger bore size causes blood to flow quickly while the smaller bore size causes blood to flow slower.

3. For adults, the general gauge of choice is 20 gauge, however, if the patient has small veins 21 or 23 gauge may be more appropriate.

4. 21 or 23 gauge needles or collector (needle with tubing & tube piercing device) are appropriate for pediatric patients.

C. Evacuated Collection Tubes or Syringes

1. Choose the tube or syringe size according to the quantity required for the test(s) requested, and by the size and condition of the patient's vein.

2. The most common correlation between blood tube stopper color & additives is as follows:

BD Vacutainer® Tubes:

STOPPER	ADDITIVE
Clear w/red center	No-additive
White	Potassium EDTA (K2 EDTA with gel).
Plain Red	Clot Activator
Tiger Top	Clot Activator w/serum separator gel
Yellow(gold) top	Clot Activator w/serum separator gel
Light Blue top	3.2% Sodium Citrate 3.2% or 3.8%
Yellow	Acid/3.2% Sodium Citrate/Dextrose (ACD)
Light Green (Mint)	Li Heparin with or without separator gel
Dark Green top	Sodium Heparin
Lavender tube (purple)	With Potassium EDTA (K2 or K3 EDTA).
Royal Blue	Sodium Heparin or Potassium EDTA (K_2 EDTA) (Heavy metals/Trace Elements).
Gray	Sodium Fluoride/Potassium Oxalate
Pink	With Potassium EDTA (K2 EDTA).

Greiner Vacuette® Tubes:

STOPPER	ADDITIVE
White (black center)	No-additive
Light Blue	Sodium Citrate 3.2% or 3.8%
Red top (black center)	Clot Activator
Yellow(gold) top / Red top (yellow center)	Clot Activator w/serum separator gel
Dark Green top (yellow center)	Lithium Heparin w/gel
Dark Green top (black center)	Sodium Heparin
Plain Dark Green top	Lithium Heparin/no gel
Lavender top (purple) (black center)	With Potassium EDTA (K2 or K3 EDTA).
Royal Blue (black center)	Sodium Heparin (Heavy metals/Trace Elements)
Gray (black center)	Sodium Fluoride/Potassium Oxalate
Pink	With Potassium EDTA (K2 EDTA).
Pink (black Center)	With Potassium EDTA (K3 EDTA).
White or Lavender (purple) with yellow center	Potassium EDTA (K2 EDTA w/gel).

Note: Please refer to the color blood tube conversion guide in Appendix B for a visual Comparison of the BD and Greiner blood collection tubes.

D. Cleansing Agents:
- **1.** 70% isopropyl alcohol
- **2.** Chlora Prep swab sticks for sterile collection or Blood ETOH.

E. Sterile Drying Agents:
- **1.** Gauze pads (2 in. x 2 in. or 3 in. x 3 in.) for general use.
- **2.** Cotton balls for patients with dermatitis.

F. Tourniquets:
- **1.** For general use, soft, latex-free rubber tubing or a Velcro band is acceptable.
- **2.** For pediatric patients, use round, latex free, rubber tubing.

III. QUALITY CONTROL:

A. All equipment & supplies are routinely checked for compliance with expiration dates.

B. Expired equipment and supplies will be discarded and replaced by in date material(s).

IV. PROCEDURE:

NOTE: If the patient is unable to understand the English language, please contact the OOD desk (x3-5008) for an interpreter.

A. Obtain orders from patient record or CHCS.

B. Ensure patient identification:

1. Match the ID band or ID card to requisition form by asking the patient to recite his full name and date of birth. If patient's ID band or card do not match the requisition form or labels:

a. do **not** collect any specimens;

b. verify the correct identity of the patient.

2. If the patient is unconscious, too young, mentally incompetent, or does not speak the language of the phlebotomist, ask the nurse, a relative, or a friend to identify the patient by name and date of birth before drawing blood.

3. Procedure for unidentified Emergency Patients: Each patient should be given a temporary, but clear designation until positive ID can be made. In all cases, the name and number of the emergency ID should be attached to the patient's body either by wristband or similar device.

C. Confirm adherence to diet restrictions, by verbal ID if necessary:

1. General fasting for glucose, etc., is 8-10 hours.

2. Fasting state for lipid studies is 12-14 hours.

3. All fasts include: No food or beverage intake (including coffee), and no gum or cigarettes. **Patients MAY HAVE WATER OR CRUSHED ICE.**

4. Contact the patient's health care provider for guidance on ingestion of prescribed medication by the patient while fasting. Instruct patient to drink water only when taking medication.

D. Reassure Patient :

1. Gain the patient's confidence and assure the patient that the process will be of short duration.

2. Inform the patient when the needle enters the skin to minimize fright and tension.

3. Do not say, "This won't hurt"

E. Position Patient Properly:

1. Extend the arm such that a straight line is formed from shoulder to wrist.

2. This position ensures access to the antecubital fossa easily and comfortably.

F. Assemble all Equipment & Supplies (See Item III A-C).

G. Select a Vein Site (considerations and restrictions):

1. A venipuncture site may be selected without wearing gloves. Gloves must be worn during the actual venipuncture.

2. Veins of the antecubital fossa, median cubital, cephalic or basilic veins are preferred.

3. Check the antecubital fossa of both arms before selecting the site by feeling with the fingertip for bounce, vein direction, depth and size.

4. Do not draw from an arm that is receiving intravenous therapy.
5. If the patient has had a mastectomy, use the opposite arm to avoid lymphostatic interferences with the blood specimen.
6. Choose another vein or another arm if a hematoma exists. If other sites are not available, apply tourniquet below the hematoma. In instances when a tourniquet is applied for site selection, release before cleansing.
7. In cases where the patient has had a double mastectomy or some other reason that the arms cannot be used, the requesting provider will be contacted to discuss alternate collection methods.

H. Cleanse and Dry the Venipuncture Site:

1. Using 70% isopropanol, or 1% Providone when necessary, cleanse in circular motion beginning at the center of the vein site working outwardly for about one inch in diameter.
2. **NOTE:** Alcohol pads must not be used when obtaining specimens for blood alcohol tests or blood cultures.
3. Allow the alcohol to air dry or wipe away alcohol with sterile gauze pads or cotton balls.

I. Apply the Tourniquet:

1. Place the tourniquet 3-4 inches above the venipuncture site.
2. For valid results, the tourniquet should not be left on the arm more than one minute as this will result in a disruption of the balance of fluids and blood elements.

J. Inspect the Needle:

1. Ensure that the needle is fastened securely into the vacutainer holder or syringe.
2. When ready for use, remove the needle cover to determine that the needle is free of hooks at the end of the point and that the bore is free of small particles which could obstruct blood flow.

K. Perform the Venipuncture:

1. Anchor the vein firmly above & below the puncture site using the thumb & index finger, or thumb & middle finger.
2. Holding the skin taut with the thumb, enter the vein with the needle bevel upward at a 15 degree angle. Follow the vein geography to secure the needle.
3. Vacutainer (evacuated) system**:**
   - **a.** Most commonly used for routine phlebotomy.
   - **b.** Place a vacutainer tube into the holder without completely penetrating the rubber stopper on the vacutainer tube with the needle.
   - **c.** Use one hand to hold the tube holder while using the other hand to gently insert the first tube all the way onto the needle, and allow the vacuum to fill the tube.
   - **d.** After the flow of blood into the tube has ceased, gently remove the tube and insert another tube as needed. Continue the process until all tubes are filled.
4. Butterfly system:
   - **a.** Ideal for pediatrics, difficult draws, and drawing from the wrist and back of the hand.

b. Place a vacutainer tube into the holder without penetrating the needle completely through the rubber stopper and remove the needle cover.

c. Gently and quickly enter the vein. Hold the "butterfly" tabs to secure the needle in the vein while drawing blood.

d. If necessary, have an assistant gently push the vacutainer tube all the way into the holder, and allow the vacuum to fill the tube.

e. After the flow has ceased, gently remove the tube and insert another as needed. Continue until all tubes are filled.

5. Syringe system:

6. Transfer blood to appropriate labeled tubes, taking caution not to hemolyze the specimen(s) and observing needle safety.

L. If the Sample cannot be obtained:

1. Change the position of the needle.

2. Try another tube.

3. Loosen the tourniquet.

4. **Do not probe.**

5. Repeat one more time, or have another phlebotomist try. Never attempt to draw a sample more than twice on the same patient without explicit permission from the patient.

M. Release the Tourniquet:

1. Allow the patient to open his/her hand.

2. Fold the clean gauze in fourths and place it over the needle.

N. Remove the needle:

1. Withdraw the needle gently but quickly.

2. Apply pressure to the venipuncture site for 3-5 minutes. Keep arm straight; don't fold.

O. Mix or Fill and Mix Tube(s):

1. Mix additive tubes by gentle inversion.

2. For syringe collections, transfer blood to the appropriate tubes and gently mix by inversion.

Note: Following blood collection, all tubes should be gently inverted 8 times (coagulation tubes 4 times). Thorough mixing is necessary to ensure adequate performance of the tube contents (additive) with the blood sample. A full inversion is when the air bubble moves from one end of the tube to the other.

P. Check the Patient:

1. Ascertain the patient's condition, e.g., look for signs of fainting.

2. Remove the gauze pad to check that the bleeding is under control. Apply a bandage.

Q. Engage needle safety device and place entire system into a hazardous waste receptacle (B-D sharps, collectors or equivalent). **SAFETY NOTE:** Never attempt to recap or cut a needle.

R. Perform special handling procedures such as chilling, incubation, etc., when appropriate.

S. Identify the specimen:

1. Label the specimen according to laboratory requirements.

2. Record initials of collector, time of collection, and collection location on each tube.

3. Second verification takes place at the Blood Bank issuance desk, checking specimen names, paperwork and collector's initials all match.

T. Deliver the specimen to the Laboratory via courier or tube system, if specimen collected outside laboratory.

V. PROCEDURE NOTES:

A. Wear gloves when collecting patient's blood; change gloves between patients.

B. When collecting drug levels, record the quantity of each dose, time of ingestion and the time of collection on the request forms.

C. When collecting below an IV site, record on request form(s) the type of IV, length of time turned off, and site of collection.

D. Special Patients:

1. A cyanotic person's blood is usually thick; thus apply warm compresses and use a larger gauge needle to collect the specimen.

2. Bend the elbow of obese patients to feel the vein; it may not be as deep as they feel.

E. Prevention of Hematoma:

1. Fully puncture only uppermost wall of vein.

2. Remove tourniquet before needle.

3. Use the major veins.

4. Apply pressure to puncture site and do not bandage until any bleeding has stopped.

VI. LIMITATIONS OF PROCEDURE:

A. Tests requiring chilling to decrease metabolic processes are gastrin, ketone, lactic acid, renin, and vitamin C (ascorbic acid).

B. Serum for cold agglutinins must be maintained at room temperature or preferably at 37^0C.

C. If a vacutainer tube fails to fill with blood, it may have lost vacuum. Keep the needle in the patient's vein, and insert another tube into the holder.

D. Veins will collapse when blood is drawn from them too quickly. The needle bore may be too large, or the pressure applied to a syringe plunger may be too strong.

E. Some additive tubes contain pre-measured amounts of anticoagulant. To ensure appropriate ratio of anticoagulant to blood, fill tubes as follows:

1. Heparin tubes are acceptable when half to completely full.

2. Potassium EDTA (K2 EDTA) or (K3 EDTA) , 3.2% Sodium Citrate, and fluoride-oxalate tubes are acceptable only when filled to the appropriate capacity.

F. When no site can be found except the area of IV administration, it is possible to draw below the IV site by the following procedure:

1. Turn off IV for 2 minutes.
2. Apply tourniquet below IV site.
3. Draw 5ml blood and discard.
4. Collect test sample.
5. Withdraw needle and apply firm but not tight bandage.
6. Restart IV.

G. Hemolysis:

1. The serum/plasma has a pink to red color.
2. It may be caused by:
a. Using needle(s) with too small a bore
b. Shaking the blood too vigorously.
c. Collecting from a hematoma site.
d. Centrifuging blood before clotting.
e. Alcohol left on skin.
f. Increased RBC fragility and increased HCT levels.

H. Patient care during special situations:

1. Fainting/light-headedness during/after phlebotomy:
a. Immediately remove the tourniquet and the needle from the patient's arm.
b. If the patient is sitting, lower his/her head and arms. Allow the patient to slide forward and lower him/her to the floor.
c. Loosen tight clothing and elevate his/her legs.
d. Apply cold compresses to the forehead and back of the neck if necessary.
e. If the patient has fainted, call his/her name while patting his/her hand or face.
f. If patient does not respond, activate appropriate EMS.
g. Designate a recorder to document patient's appearance, vital signs and all treatment given.
2. Nausea/vomiting:
a. Hold waste container or emesis basin for patient.
b. Make the patient as comfortable as possible. Allow patient to rinse his/her mouth with cold water.
c. Instruct the patient to breathe deeply and slowly.
d. Apply cold compresses to the forehead and back of the neck if necessary.
3. Convulsions:
a. Prevent the patient from injuring himself or others. DO NOT restrain the movements of the patient's extremities completely, but try to prevent injury.
b. Activate appropriate EMS.
c. Designate a recorder to document patient's appearance, vital signs, and all treatment given.
4. Cardiac arrest:
a. **CALL FOR HELP.**
b. **Call or have someone else call x3-5555. State "cardiac arrest" and give location.**

c. Initiate CPR and maintain until cardiac arrest team or physician arrives. Provide assistance as requested.

d. Designate a recorder to document patient's appearance, vital signs, and all treatment given.

VII. REFERENCES:

A. Henry, Clinical Diagnosis and Management by Laboratory Methods, 20th, Edition, Pages 8-20, Saunders, PA, 2001.

B. NCCLS, Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture, Second Edition, Vol. 4, No. 2,Villanova, PA, 1984.

C. Blumenfield & Slockbower. Collection and Handling of Laboratory Specimens, A Practical Guide, First Edition, Pages 2-35, Lippincott, PA, 1986.

CAPILLARY PUNCTURE BLOOD COLLECTION PROCEDURE

I. MATERIALS:

A. 3.1 mm lancets (finger puncture only)

B. 2.4 mm point (heel puncture)

C. Alcohol swabs (silicone impregnated swabs will provide a good "bubble" and better quality collection).

D. Gauze pad.

E. Capillary collection containers (Microtainer or equivalent with preservative as specified by test requirements. Plan the number of containers needed from the tests requested).

F. Disposable latex free gloves

G. Sharps container

II. PRECAUTIONS:

A. Puncture site must not be edematous, inflamed (as with a rash), or a recently used site.

B. Puncture must not be more than 2.4 mm deep for heels, or 3.1 mm for fingers. DO NOT use scalpel blades.

C. Do not puncture the palmar surface of the distal phalanx (finger) of infants and newborns especially premature infants.

D. Do not apply adhesive bandages to puncture sites on children younger than two years old. Maintain direct pressure until bleeding is controlled.

III. CAPILLARY HEEL STICK PROCEDURE FOR INFANTS:

A. Do not try to obtain blood from the finger of infants, because the bone is so close to the surface which could be injured by the lancet.

B. Positively identify the infant by the infant's patient identification band which should have the baby's name and complete SSN with prefix. If the band is not on the infant, have the nurse or parents positively identify the infant.

C. Assemble and prepare equipment.

D. If desired, the heel can be prewarmed with a warm compress.

E. Wash hands and put on properly fitting gloves.

F. Use the sides of an infant's heel. Never use the central portion of the heel because you could injure the underlying bone, which is close to the skin surface at this point. Do not use a previous puncture site.

G. Clean the puncture site with an alcohol pad.

H. Dry the cleaned area with dry, sterile gauze. Repeat this step if the area is touched again.

I. Hold the foot firmly to avoid sudden movement.

J. Puncture the cleaned site across the skin print lines with a lancet no deeper than 2.4 mm.

K. With sterile gauze, wipe away the first drop to eliminate skin cell contamination.

L. If the blood is not free flowing, use gentle pressure to produce a rounded drop of blood. Massaging too heavily will dilute the blood with tissue fluid, thereby falsely affecting the lab test results.

M. Collect hematology specimens first, followed by chemistry and blood bank specimens. Fill the capillary tubes or microtainers as needed. Be sure to gently shake any microtainers with anticoagulants as the blood enters to prevent clotting.

N. When finished, elevate the infant's heel. Place clean, sterile gauze on the puncture site and apply pressure until the bleeding has stopped. Do not use adhesive strips.

O. Label the specimens with complete name, complete SSN with prefix, date and time of collection, location of where collected, and initials of person collecting the specimen.

P. Remove gloves and wash hands. Dispose of lancet in sharps container.

IV. FINGER PUNCTURE:

A. Finger Puncture (18 months to adult)

1. Finger puncture sites are the center of the distal phalanx on the palmar surface of the finger.

2. Do not perform the puncture on the side or tip of the finger since the tissue thickness in these areas is about one half of that in the center of the finger.

3. Do not puncture deeper than 3.1 mm because the distance from the skin surface to the bone varies from 3.1 mm to 10.9 mm in children.

B. Prepare the puncture site.

1. Clean the chosen site with a 70% alcohol prep pad.

2. Allow to air dry prior to the puncture to prevent hemolysis as the blood contacts the alcohol.

3. Wipe with a sterile silicone impregnated swab (if available).

C. Prepare the collection containers.

D. Collection Technique:

1. Grasp firmly for 5 seconds.

2. Puncture the appropriate site with a single, swift "assertive" stroke.

3. Wipe away first drop of blood.

4. Collect the sample by capillary action into the collection container (fill anticoagulant/ preservative containers first).
5. Release pressure for 5 seconds.
6. Follow steps D1, 4 and 5 until the required amount of blood is collected.
    a. Potassium EDTA (K2 EDTA) microtainers require 300 microliters of blood.
    b. Serum separator microtainers are filled at 900 microliters of blood.
    c. 0.5 to 1 ml (500-1000 microliters) of blood may be collected from a single puncture.

E. Stop the bleeding by applying pressure to the puncture site using a sterile gauze pad.

F. To insure adequate mixing of whole blood with the anticoagulant in microtainers, flick the Microtainer several times with your finger. Visually inspect the microtainer to insure adequate mixing.

V. MISCELLANEOUS:

A. Sources of Error:
1. Improper site selection.
2. Superficial puncture.
3. Inadequate warming of site.
4. Improper collection container for test requested.
5. Contamination and dilution of specimen by tissue fluids due to excess or too vigorous massage of puncture site.
6. Fibrin clot formed from inadequate mixing of specimen with anticoagulant.

B. Disposal of Contaminated Material. As specified by current infection control requirements.

VI. REFERENCES:

A. Bloomfield, Thomas and Stockbower Team. Collection and Handling of Laboratory Specimen - A Practical Guide, pgs 46-54, L.P. Lippincott Co., Philadelphia, PA 1983.

B. So You're Going to Collect a Blood Specimen: An Introduction to Phlebotomy. Sixth Edition, College of American Pathologists.

BLOOD CULTURE COLLECTION

I. PRINCIPLE:

A. If microorganisms are present in a patient's blood sample inoculated into the BACTEC blood culture sets, carbon dioxide (CO_2) will be liberated into the vial atmosphere as an end product of bacterial respiration. Testing consists of using fluorescence spectrophotometry to measure the amount of CO_2 liberated by the microorganisms. The quantity of CO_2 present in the BACTEC blood culture set is directly proportional to the amount of infrared light absorbed.

II. MATERIALS:

A. Aerobic culture vial: BACTEC Plus Aerobic/F (Silver top) AND

B. Anaerobic culture vial: BACTEC Lytic/10 Anaerobic/F (Purple top), OR

C. Pediatric culture vial: BACTEC Peds Plus (Pink top).

D. 70% isopropyl or ethyl alcohol swabs.

E. Sterile 2" X 2" gauze pads.

F. Chloraprep® Swabs (1.5 mL 2% chlorhexidine gluconate and 70%

G. Alcohol.

H. Venipuncture set-up:

1. Vacutainer needles.
2. Syringe-type needles, if desired.
3. Syringes, if desired.
4. Butterfly needle/tubing set, if desired.

I. Tourniquet

J. Soap

K. One CHCS order per set of culture vials.

L. Transport bag (ziplock bag).

III. PROCEDURE:

NOTE: If patient is unable to understand the English language, please contact the OOD desk (X3-5008) for an interpreter.

A. Identify the patient.

B. Select and prepare venipuncture site.

1. Inspect both arms of the patient for a suitable vein.
Note: The venipuncture site should be free of edema, infection and other skin disorders.

2. Place the tourniquet around the patient's arm and select an optimal venipuncture site.

3. Release the tourniquet.
4. Proceed to clean the area as follows:
   a. Remove a sterile chloraprep applicator from its package grasping the wings, and holding the sponge downward over the venipuncture site.
   b. Pinch the wings on the applicator to break the ampoule and release the antiseptic. Do not touch the sponge.
   c. Wet the sponge by repeatedly pressing and releasing the sponge against the treatment area until liquid is visible on the skin. Use repeated back and forth strokes of the applicator.
   d. Scrub for at least 30 seconds using front and back strokes, completely wetting the treatment area with antiseptic.
   e. Allow the site to dry for at least 30 seconds. DO NOT blot or wipe.
5. If not ready to perform venipuncture immediately, cover the area with dry, sterile 2" X 2" gauze. If venipuncture cannot be done in less than 2 minutes, the arm must be re-scrubbed.
   NOTE: After the skin has been prepared, it must not be touched again. Do not re-palpate the vein at the venipuncture site.
6. Remove the colored flip-off caps from the BACTEC vials and swab the rubber septum with 70% isopropyl alcohol pads **ONLY**. Use different pads for each vial. **The use of iodine will destroy the rubber in the septa**.
7. Apply the tourniquet, visually relocate the intended venipuncture site, and perform the venipuncture. Insert the Blood Culture vials into the vacutainer holder and allow to fill.
8. If a syringe is used, for Adults, draw enough blood to inoculate two blood culture vials with 8-10 mL of blood each (16-20mL blood total); for Peds, draw 1-3mL of blood for a single Peds vial. For Adults, inoculate the anaerobic culture vial first as it contains a predetermined amount of CO_2 and N_2, which would be altered by the introduction of air.
9. Verify that correct volume was drawn by comparison to scale on side of bottle, to ensure optimal recovery of microbes.
10. Label each blood culture vial with the patient's name, SSN, location where collected and time specimen was drawn. Specimen labels must be verified by the patient or another staff member. **DO NOT COVER THE BARCODE LABEL ON THE CULTURE VIALS**. Enter one CHCS order for each complete set.
11. Gently mix the blood culture vials after inoculation.
12. Transport the bottles to the lab promptly to assure viability of any microorganisms present.

C. Dispose of the venipuncture equipment into a closed system biohazardous waste container.

D. Inspect the patient's arm to assure that blood flow has ceased, and then apply a bandage.

IV. LIMITATIONS:

A. Extreme care must be taken to prevent contamination of the samples during collection and inoculation into the BACTEC vials. A contaminated sample will give a positive reading, but will not indicate relevant clinical data. Contaminated samples may also hinder and/or hide true blood-borne pathogens.

B. BACTEC vials are designed to detect in the blood stream the presence of microorganisms. Cerebral-spinal fluids, joint fluids, and any other sterile body fluid will be worked up with a comment indicating the specimen was inappropriately submitted.

C. Consultation with Infectious Disease has resulted in the following guidelines:

1. 95% to 99% of all septicemias can be detected by collecting 8-10mL of blood per culture vial three times over a 24-hour period. Each aliquot of blood is inoculated into the anaerobic and aerobic vials in a complete blood culture set.

2. Resin bottles, used for blood cultures while the patient is on antibiotics, cannot be justified either by rate of recovery of the organisms or by expense. Regular blood culture vials may be used for patients on antibiotics by drawing a specimen near the antibiotic(s) trough.

3. Unusual circumstances (i.e., significant change in patient's condition or other need) should be conveyed to the Microbiology Branch at the time of request to substantiate the need for additional blood culture vials.

V. REFERENCES:

A. **BACTEC™** Plus Aerobic/F and Plus Anaerobic/F Culture Vials Inserts. BD Diagnostics, latest version.

B. **BACTEC**™ Peds Plus/F Culture Vials Insert. BD Diagnostics, latest version.

C. **BACTEC FX** System User's Manual. Document Number 8005110. BD Diagnostics, latest version.

INSTRUCTIONS FOR GLUCOSE TOLERANCE TESTS

I. PRINCIPLE:

A. Patients with mild or diet-controlled diabetes may have fasting blood glucose levels within the normal range, but be unable to produce sufficient insulin for prompt metabolism of ingested carbohydrates. As a result, blood glucose rises to abnormally high levels and then return to normal is delayed. A glucose tolerance test, or a glucose challenge, is helpful in diagnosing Type 2 diabetes. Gestational Diabetes is also screened and diagnosed with the glucose tolerance test.

II. POLICY :

NOTE: If patient is unable to understand the English language, please contact the OOD desk (x3-5008) for an interpreter.

A. All tests requiring the administration of a 75g, or 100g dose of Glucola ™ will be preceded by a fasting (or preliminary) glucose level through the collection of a grey top tube.

B. Patient Reactions to the Procedure

1. The patient will be required to remain in the laboratory waiting area during the duration of the procedure.

2. The health care provider will be contacted if the patient becomes ill or faint during any special glucose test. A glucose level will be drawn and processed immediately. The health care provider will be notified of the result and will be asked if the procedure should be continued or be rescheduled.

3. If the patient should experience chest pains or become seriously ill, activate EMS. The health care provider will be contacted and advised of the patient's situation.

4. The test will be discontinued and the health care provider notified in any case of the patient vomiting prior to completion of the test. The health care provider will decide if the patient is to be rescheduled.

III. PROCEDURES AVAILABLE:

A. <u>One Hour Post Glucose 50g dose</u>:

1. Diabetic screening test for O.B. patients.

2. Patient is not required to be fasting but may per health care provider's instruction.

3. Scheduling with the lab in advance is <u>not</u> required.

B. <u>Two Hour Glucose Tolerance Test 75g dose</u>:

1. Requires patient to be fasting (8-10 hours) prior to having blood drawn.

2. Scheduling with lab in advance is <u>not</u> required.

C. <u>Three Hour Glucose Tolerance Test 75g dose</u>:

1. This test is ordered for the diagnosis of Type 2 diabetes.

2. Fasting 8-10 hours prior to testing, stay in the laboratory area throughout the procedure.

3. Patient needs to arrive in the laboratory before 1300.

D. <u>Three Hour Glucose Tolerance Test 100g dose</u>:

1. This test is ordered for the diagnosis of gestational diabetes.

2. Fasting 8-10 hours prior to testing, stay in the laboratory area throughout the procedure.

3. Patient needs to arrive in the laboratory before 1300.

E. Two Hour Post Prandial Profile:

1. Requires two specimens: a fasting and two-hour post prandial.

2. Advanced scheduling with the lab is not required and walk-ins are acceptable if they have been fasting 8-10 hours prior to testing.

IV. REFERENCES:

A. Volume 23, Supplement 1, American Diabetes Association: Clinical Practice Recommendations 2000, Screening for Type 2 Diabetes

B. Volume 21 Supplement 2, Proceedings of the Fourth International Workshop-Conference on Gestational Diabetes Mellitus, the Diagnosis of Gestational Diabetes.

PATIENT PREPARATION FOR GLUCOSE TOLERANCE TESTING

I. POLICY:

Please call Outpatient Phlebotomy (3-1623/3-1644) for appointment

NOTE: If patient is unable to understand the English language, please contact the OOD desk (3-5008) for an interpreter.

EAT NOTHING AFTER 2200(10:00 P.M.) THE DAY PRIOR TO THE TEST.
YOU MAY HAVE WATER TO DRINK AND WATER ONLY. DO NOT DRINK COFFEE, TEA OR COLA DRINKS.

DO NOT SMOKE AFTER 2200 (10:00P.M.) UNTIL THE TEST IS COMPLETED.

IT WILL BE NECESSARY FOR YOU TO REMAIN IN THE LABORATORY UNTIL THE TEST IS COMPLETED.

PLEASE ARRIVE AT THE LABORATORY no later than 1330.

GLUCOSE TOLERANCE TEST: PATIENT'S NAME: _____
DATE: _____ TIME REPORTED TO LAB: _____

NO SMOKING OR EATING; ONLY WATER AND /OR ICE MAY BE CONSUMED DURING THE TEST! IF YOU FEEL SICK, DIZZY, OR LIGHT HEADED, PLEASE NOTIFY THE TECHNICIAN AT ONCE! IF AT ANY TIME YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO ASK.

PERIOD	PHLEBOTOMIST	BLOOD DRAWN?	TIME
FASTING	_____	Y / N	_____
1 HOUR	_____	Y / N	_____
2 HOUR	_____	Y / N	_____
3 HOUR	_____	Y / N	_____
4 HOUR	_____	Y / N	_____
5 HOUR	_____	Y / N	_____

INSTRUCTIONS FOR COLLECTION OF URINE SPECIMENS

I. PURPOSE:

A. To provide guidance for collection and submission of urine specimens for clinical lab tests. For urinalysis to be meaningful, the specimen must be properly collected to avoid contamination, or deterioration of the constituents. Improper collection may invalidate the results of laboratory procedures no matter how carefully and skillfully the tests are performed.

NOTE: If patient is unable to understand the English language, please contact the OOD desk (x3-5008) for an interpreter.

II. PRINCIPLE:

A. The concentration of urine varies throughout a 24-hour period depending partly on the patient's water intake and partly on his activities. Various solutes may appear in greater or lesser amounts at various times of the day (e.g., glucosuria appears more often after meals, proteinuria may occur following activity or assumption of the orthostatic (upright) position, and hemoglobinuria may follow severe exertion). The number of bacteria in the urine of a patient with a urinary tract infection varies greatly throughout the day. In general, a more concentrated urine is preferred for testing rather than a dilute specimen. Therefore, the first morning voided urine, which is the most concentrated, is the best for routine analysis. Often it is not practical to obtain the first morning specimen and a randomly voided specimen of lesser concentration is usually obtained. Therefore, the effect of the concentration of a sample, as measured by the specific gravity, should be considered in the interpretation of the results.

B. Routine tests and any other tests performed on a random sample of urine are qualitative in nature. At best, only the concentration of a substance in the specimen tested can be measured, but never the total amount being excreted unless the urine is collected over a precisely measured period of time. For example, two random specimens are tested for proteinuria. One may show a heavy concentration of protein and the other only a slight amount. If the first specimen is a very concentrated sample and the second a very dilute sample, the actual total amount of protein may be greater in the second. A 24-hour specimen may provide a more representative sample in these cases.

III. COLLECTION CONTAINERS:

A. Containers used for collecting urine are quite variable. Regardless of type, they must be capable of being cleaned and thoroughly dried before specimens are collected. Without these initial safeguards, test results may be compromised.

B. Disposable plastic containers are available in many sizes (sterile and non-sterile) and are provided with lids for covering the specimen to reduce bacterial and other types of contamination. Large, wide-mouthed plastic or glass containers with screw-cap tops are used for cumulative collection of urine over a long period of time. These bottles should be kept refrigerated or should contain an appropriate chemical preservative.

C. All containers and preservatives for the collection of 24-hour urine will be dispensed by the Laboratory department.

D. Preservative requirements for 24 Hour Urine.

TEST	REQUIREMENTS
Calcium, Urine	No preservative
Uric Acid, Urine	No preservative
Amylase, Urine	No preservative, Mail out
Creatinine, Urine	No preservative
Glucose, Urine	No preservative
Magnesium, Urine	No preservative
Phosphorus, Urine	No preservative
Urea Nitrogen, Urine	No preservative
Protein, Urine	No preservative

IV. PRECAUTIONS IF URINE IS NOT EXAMINED WITHIN ONE TO TWO HOURS:

A. Urine kept at room temperature for longer than one – two hours before analysis will result in deterioration of chemical and cellular elements. Bacterial multiplication regularly occurs in urine specimens that remain at room temperature for over one hour. Bacteria may utilize glucose in the urine, and convert urea to ammonia, producing an alkaline urine. In addition, casts will decompose in urine after several hours, and red blood cells are lysed by hypotonic urine. Marked changes in pH will affect the cellular components.

B. If testing is unavoidably delayed (night collections, etc.), refrigeration at 2 - 8^0C is often the only precaution needed to preserve the urine for routine analysis. Chemical preservatives may be used when specimens cannot be refrigerated or for certain special collections. Addition of any chemical preservatives to the urine specimen should be indicated on the specimen label or container.

Note: Refrigeration of urine may be acceptable since it inhibits bacterial growth, but it does not Prevent the lytic effects of low specific gravity or alkaline pH. Urine crystal formation may be Induced by refrigeration. Preparations that contain boric acid/sorbitol or release formaldehyde May be effective preservatives for some, but not all urine tests.

V. TYPES OF SPECIMENS:

A. Routine Urinalysis :

1. A freshly voided urine specimen is adequate for most urinalysis except for the bacteriologic (culture and sensitivity) examination. The patient should be instructed to void directly into a clean, dry container and then transfer the specimen into an appropriate container.

2. If a urine specimen is likely to be contaminated with vaginal discharge or menstrual blood, a clean voided specimen must be obtained using the procedures described below.

3. All specimens must be labeled and orders placed in CHCS.

B. Clean Catch/Midstream Specimens :

1. These specimens are most commonly used for obtaining urine suitable for bacteriologic examination. Bladder catheterization and percutaneous suprapubic aspiration of the bladder may be used, but only in very rare and unusual circumstances. Collection of a

clean voided specimen is the method of choice unless specific contraindications exist. To avoid contamination of the specimen by organisms often harbored normally in the distal urethra, the initial stream of voided urine, which clears these organisms from the urethra, is discarded and the subsequent midstream urine is collected directly into a sterile container.

2. A satisfactory technique for collection of clean catch and midstream specimens for bacterial, fungal, and other urine microbiology specimens from females is posted in specimen collection lavatories or provided to each female/ male patient collecting a specimen.

C. 24-Hour Urine Collection:

1. A 24-hour urine specimen provides the best representative clinical picture of the patient's metabolic condition.

2. **INSTRUCTIONS:** On the selected morning, empty your bladder and discard this specimen. For the next 24-hours, save all urine voided in a clean container and transfer it to the collection container provided. Try to pass the last sample to be collected at the same hour the collection began. Store the specimen in a cool place, preferably refrigerated, between voids. Return the specimen to the Laboratory as soon as possible after completing the collection.

VI. DIETARY INSTRUCTIONS:

A. VMA (Vanillylmandelic Acid):

To preclude false elevations of VMA, avoid intake of salicylates (aspirin), caffeine, phenothiazine, antihypertension agents, coffee, tea, chocolate, fruits such as bananas, citrus, and substances containing vanilla for three days prior to and during the collection. If you have any questions regarding the diet or drugs, contact the physician who ordered the test. If you have any questions about the actual collection, contact the Laboratory department.

B. METANEPHRINES DIETARY INSTRUCTIONS FOR 24-HOUR URINE COLLECTION:

To prevent false elevations of metanephrines, avoid the intake of caffeine. The following drugs interfere with this test: monamine oxidase inhibitors, **Propranolol HCl** (Inderal), and the diuretic trimterene (Dyazide and Dyrenium). If you have questions regarding the diet or drugs, contact the physician who ordered this test. If you have questions regarding the collection, contact the Laboratory department.

C. 5-HIAA DIETARY INSTRUCTIONS FOR 24-HOUR URINE COLLECTION:

To prevent false elevations of urinary 5-HIAA (also known as serotonin) avoid intake of bananas, avocados, plums, eggplant, pineapples, walnuts, alcohol, frozen desserts, meat and poultry skin, and gelatins for three days prior to and during collection. The following medications will also interfere: cough syrup containing guafinesin, Tylenol (acetaminophen), Emperin (phenacetin), Acetanilid, glyceryl guaiacolate mephensin, methocarbamol, reserpine, chlorpromazine, promazine, imipramine, isoniazid, MAO inhibitors, methenamine, methyldopa, phenothiazines promethazine, or any compound containing these drugs. If you have questions regarding the medication, contact the physician who ordered the test. If you have questions regarding the urine collection, contact the Laboratory department.

D. CATECHOLAMINES DIETARY INSTRUCTIONS FOR 24-HOUR URINE COLLECTION

To prevent false elevations of catecholamines, avoid intake of all medications including vitamins for three days prior to and during collection. This includes all epinephrine or norepinephrine-like medication, aspirin, vitamin B compounds, alpha-methyl dopa, and "mycin" antibiotics. Omit substances containing caffeine, bananas, chocolate, and vanilla. If you have questions regarding the diet or drugs, contact the physician who ordered this test. If you have questions regarding the collection, contact the Laboratory department.

VII. SPECIAL URINE COLLECTIONS:

A. Catheterization: Performed by provider or nurse (follow patient preparation and submission requirements described above as appropriate)

B. Suprapubic Aspiration: Performed by provider (follow patient preparation and submission requirements).

C. Ureter Catheterization: Performed by provider (follow patient preparation and submission requirements)

VIII. REFERENCES:

A. Henry, Clinical Diagnosis and Management by Laboratory Methods, 20th edition, pages 20-24, 412-413, 1323, Saunders, PA, 2001

PATIENT INSTRUCTIONS FOR "CLEAN CATCH" OR "MIDSTREAM" URINE SPECIMEN COLLECTION (MALE/FEMALE)

I. Materials (Provided by Lab or Clinic):

A. Labeled sterile cups for culture.

B. Labeled urine tubes for routine urinalysis.

C. Three pre-moistened antiseptic cleaning wipes.

II. Patient Instruction (For best results, the patient should have a strong urge to void.)

A. Wash your hands.

B. Remove lid from specimen container. Do not touch inside the lid or container. Set container and lid aside until you collect your specimen.

C. **MALE:** Expose your penis as you would to pass urine. Pull back foreskin (if present). Wipe away from the penis opening (urinary meatus) with the first wipe. Throw the first wipe into the trash can. Repeat the cleaning a second and third time with the other wipes. With the foreskin still retracted, pass a small amount of urine into the toilet and stop. Go to Step E.

D. **FEMALE:** Sit far back on the toilet. With your index and middle fingers of one hand, hold the layers of skin around the urinary opening apart and keep apart for the rest of the procedure. Take the first cleaning wipe and wipe from front to back (from clitoris towards anus) along one side of the opening. Throw the first wipe in trash can. With the second wipe, clean front to back on the other side. Throw wipe in trash can. Wipe directly across the opening with the third wipe. Throw wipe in trash can. Pass a small amount of urine into the toilet and stop. Go to Step E.

E. Take the specimen container and hold it a few inches from you. Urinate and catch the midstream urine. Do not overflow the container. Finish voiding into the toilet.

F. Transfer a portion of urine to a plastic bullet tube if directed to do so by reception staff (this is required if there is a routine urinalysis ordered). Close the lid on the container(s).

G. Wash your hands. Dress. Return your specimen to the Urine Drop-off window.

INSTRUCTIONS TO PATIENTS FOR 24-HOUR URINE COLLECTION

Note: Please read all of the instructions before you begin your urine collection. It is important that you follow these instructions in order to provide a valid test sample. The collection must include all urine that is passed in the 24-hour time period. The test will be inaccurate and may have to be repeated if all of the urine is not placed into the collection container. You will find more convenient to void (urinate) into the smaller container provided and transfer the urine into the larger collection container. Do not add anything but urine to the container and do not pour out any liquid or powder that may already be in the collection container as these substances may cause burns if touched. The collection container should be kept refrigerated throughout the collection period.

1. Upon arising in the morning, urinate into the toilet, emptying your bladder completely. Do not collect this sample. Note the exact time and print it on the container label.
(Start Time: _____/Date: _____)

2. Collect all urine voided for the next 24 hours in the container provided by the physician or laboratory. All urine passed during the 24 hour time period (day and night) must be saved. Urine passed during bowel movements must also be collected.
(Finish Time: _____/Date: _____)

3. Drink 8-10 glasses of water on the day of collection. The urine container must be kept refrigerated during the collection period. **(Tip: Keep a large container of ice or an ice chest with ice in the restroom to store your container and to serve as a reminder of your collection.)**

***DO NOT VOID DIRECTLY INTO THE CONTAINER.**

4. Some containers contain an acid or base preservative. Please do not urinate directly into the container as it may cause burns when coming in contact with your skin. Urinate into a cup or a smaller transfer container and transfer urine into the 24-hour collection container.

5. It is important to note that if you fill up the container before the end of the 24 hour period that you continue the collection of urine using a clean/dry household container (mason jar, plastic jug, etc…) or you can come back to the laboratory and we will gladly give you another 24-hour urine container to finish your collection.

6. At exactly the same time the following morning, void completely again (first time after awakening), and add this sample to the collection container. This completes your 24-hour collection.

7. Take the 24-hour specimen container to the Laboratory Specimen Receiving Area as soon as possible after collection, maintaining the cool temperature in transit by placing the specimen in a portable cooler or insulated bag.

NOTE: Please ensure that your container is labeled with your full name and full sponsor SSN with prefix.
There is a chance you may have blood work drawn when you return the specimen to the Laboratory.
For any questions please call Client Services at 757-953-6244.
Thank you for your help and cooperation.

INSTRUCTIONS FOR OBTAINING SEMEN ANALYSIS TESTING

I. PURPOSE:

To provide general information on policies and procedure to be followed when submitting specimens for Semen Analysis. The following Semen Analysis Testing is currently offered at NMCP:

A. Post Vasectomy Semen Analysis to determine the presence or absence of sperm cells.

1. Samples are collected in the Urology Clinic and are brought directly to the Laboratory for analysis. Samples are to be delivered to the Laboratory within thirty minutes of collection. ***Note: Samples will only be collected on Thursday's from 0730-1030.***

2. Samples are to be collected in a sterile container, labeled with the patient's name, social security number with FMP and Date and time of collection.

3. Specimens should be collected after two to seven day period of sexual abstinence. The patient should avoid lubricants or other substances that may contaminate the sample.

4. Semen samples for post vasectomy testing will be processed immediately.

5. Causes for rejection of specimens include, improperly labeled specimens or leaking specimens and sample collection in a non-sterile cup.

B. **Basic Semen Analysis testing is not currently offered at NMCP Laboratory Dept**. Through a partnership with Eastern Virginia Medical School (EVMS) and Quest Diagnostics, Basic Semen Analysis will be collected and tested at the EVMS Andrology Laboratory in Norfolk, VA. Request forms for this testing may be obtained through the NMCP Infertility Clinic, Branch Health Clinics or the NMCP Laboratory Department. ***Note: specimen collections are performed at the EVMS Andrology Laboratory. NMCP does not perform collections for Semen Analysis. Please refer to the following step-by-step guide.***

1. Provider/Independent Duty Corpsman (IDC) will place order in CHCS under Semen Analysis Basic-Navy New.

2. Provider/IDC will obtain EVMS Andrology Laboratory request form and fill out all required information, including ordering provider signature.

3. Provider/IDC will give the request form to the patient. Instruct the patient to call the number at the top of the request form to schedule an appointment with the EVMS Laboratory Department.

4. Patient will take the request form with them to EVMS on their scheduled appointment date/time and give the request form to the reception area clerk. ***Note: Patient appointments are required in advance of any testing. EVMS must have this signed request form when the patient presents to EVMS.***

5. EVMS will then send the request form via FAX to NMCP Client Services Department and the CHCS Semen Analysis order will be activated and accessioned by Client Services staff.

6. NMCP Client Services will then fax the request form back to EVMS with the appropriate CHCS accessioning area information and CHCS patient label.

7. Once EVMS receives the CHCS patient information, the patient will be given further instruction by EVMS staff on the specimen collection and testing requirements.

8. Complete Semen Analysis patient results will be faxed from EVMS to the NMCP Quest Processing Bench. Results will be available in CHCS within 24- 48 hours of specimen collection.

Note: The EVMS Andrology Laboratory is located at:

601 Colley Avenue. Suite 280, Norfolk, VA23507 – Lab main line: 757-446-5737

COLLECTION OF FECAL SPECIMENS

I. PURPOSE:

To enhance recovery times and detection of parasite ova and trophozoites and preserve other structures in the stool having diagnostic or treatment significance.

NOTE: If patient is unable to understand the English language, please contact the OOD desk (x3-5008) for interpreter.

II. CONTAINER:

Obtain a specimen cup from the Laboratory Department.

III. METHOD:

A. Instruct female patients to urinate prior to stool collection due to harmful effects of urine on protozoa if collected in the same container.

B. The stool must be collected prior to toilet bowel contamination (catch sample before touching the water using a clean paper plate or directly into the collection/transfer container.

C. Transfer a portion of the sample into the transport cup provided. Care must be taken not to contaminate the outside of the container. Fill the cup **one-half (½)** full and close tightly.

IV. SPECIAL INSTRUCTIONS:

A. Collect stool prior to radiologic studies involving barium sulfate, or one week or longer after use of barium.

B. Avoid mineral oil, bismuth, nonabsorbable antidiarrheal preparations, antimalarials, and some antibiotics (tetracyclines). Organisms may be difficult to detect for several weeks after medication is discontinued.

C. A minimum of three fecal specimens on alternate days are recommended to ensure recovery of intestinal parasites and pathogenic bacteria. Number samples consecutively if they are submitted together and note time and date of collection on each.

D. For the best possible recovery of enteric parasites and pathogenic bacteria, instruct the patient not to refrigerate the specimen(s) unless it is not possible to deliver the specimen(s) within four (4) hours.

E. The following diagnostic testing guidelines are recommended to clinicians regarding the number and/or timing of collection of stool specimens submitted for routine bacterial testing.

1. Acceptance of more than 2 specimens/patient is discouraged without prior consultation with a pathologist or microbiology supervisor who can explain the limited yield provided by additional specimens. 2. Acceptance of stool specimens from inpatients after the third hospital day of admission without prior consultation is not recommended.

2. Testing stool for Clostridium difficile toxin for all patients over 6 months of age with clinically significant diarrhea and a history of antibiotic exposure is highly recommended. Consider C. Difficile testing as an alternate to routine microbiologic

studies for inpatients over 6 months of age who have test requests for routine enteric pathogens.

F. The following guidelines for diagnostic testing are recommended to clinicians regarding the number and/or timing of collection of stool specimens submitted for routine parasitology testing.

1. Acceptance of no more than 2 or 3 specimens/patient is discouraged without prior consultation with a pathologist or microbiology supervisor who can explain the limited yield provided by additional specimens.

2. Acceptance of stool specimens from patients after the fourth hospital day of admission without prior consultation is not recommended.

BLOOD BANK/TRANSFUSION MEDICINE

I. PURPOSE:

To learn the policies and procedures governing the ordering and distribution of blood and blood products, refer to NAVMEDCENPTSVAINST 6530.4 series. The following NMCP Blood Bank intranet site is also a good Resource:
https://intranet.mar.med.navy.mil/ClinSup/Lab/BloodBank/index.asp
All Blood Bank request forms and Blood Bank samples (pink top with Potassium EDTA (K2 EDTA) or (K3 EDTA) tubes must be properly labeled, signed, and verified. One form 6530/9, Request for Blood Products or Essentris blood note, can be used for multiple blood products, if required.

II. TIME REQUIREMENTS FOR TEST RESULTS AND BLOOD PRODUCT ISSUE

A. Emergency Release Red Blood Cells:
Emergency group O or Type Specific, Uncrossmatched: within 5-10 minutes after request.

EMERGENCY RELEASE

In a bleeding emergency, a provider may order EMERGENCY RELEASE red blood cells (uncrossmatched)

_____

The person tasked to call Blood Bank will say:
"This is _____(name) in the _____(location).
I need ____(number red cells*) by EMERGENCY RELEASE for _____(patient's name & FMP/SSN).
Please SEND THE BLOOD VIA TUBE SYSTEM AT TUBE STATION _____(if blood is tube tubed). Alternately state "a runner will pick up the blood".

*Two units are usually issued for adult, one unit for neonate.

Please send a properly labeled Blood Bank Sample as soon as possible. Emergency Release Forms must be signed by the ordering physician when the Emergency is resolved.

B. Type and Screen (T&S):

1. Includes ABO-Rh typing and Antibody screen, for patients who are unlikely to need transfusion. If blood is urgently needed, however, the Type and screen can be "converted" to a crossmatch and blood units will be available very quickly (within 15-20 minutes).

C. Type and Crossmatch (T&C):

1. Includes ABO-Rh Typing, antibody screen and crossmatch.

2. In patients with an uncomplicated workup, blood can be available in about 1 hour for STAT orders. The Blood Bank prioritizes its work. Urgent requests are processed ahead of others. If antibodies are present, finding compatible units may take several hours and additional patient samples may be needed. Frozen products require at least 45 minutes for thawing.

D. Samples for T&S or T&C are available for 72 hours: **Exception:** Preoperative patients who have not been transfused or pregnant in the last 3 months may qualify for 14-Day Hold. Send completed Form 6530/16 “14 Day Hold Request”.

E. Other Blood Products:

1. See NAVMEDCENPTSVAINST 6530.4

III. RH IMMUNE GLOBULIN (RHIG):

A. Requests for Rh Immune globulin (RhIg) are to be submitted using a 6530/9 Request for Blood Products form or Essentris blood note, accompanied by a properly labeled and verified pink top tube.

B. Rhophylac® can be administered IM or IV. See the Rhophylac® nursing procedure.

IV. REQUESTS FOR THERAPEUTIC PHLEBOTOMIES, AUTOLOGOUS COLLECTIONS, AND APHERESIS PROCEDURES:

A. Routine Hours of Operation: 0700-1530 (Monday to Friday, excluding weekends and holidays). Emergency pager is available.

B. Requests for Therapeutic Phlebotomies, Autologous Collections, or Red Cell Exchanges, Therapeutic Leukapheresis or Therapeutic Plateletpheresis should be submitted using SF-513 “Consultation Sheet”.

Therapeutic **Plasmapheresis** is performed via consultation with Nephrology. For special apheresis procedures (leukocyte or platelet reduction), consult Blood Bank

SURGICAL PATHOLOGY SPECIMEN SUBMISSION POLICIES

I. PURPOSE:

The information in this manual is provided to show current practices within the Surgical Pathology/ Histology Department. All recommendations and procedures are in agreement with the requirements of the JC and the College of American Pathologists. **Note: Because of the importance of clinical information in the practice of surgical pathology and cytopathology, requisitions for such specimens should include pertinent clinical data as well as pre-operative and/or post-operative diagnosis.** The following surgical pathology services are offered at NMCP:

1. Routine surgical pathology processing.
2. Gross and microscopic examination of tissue biopsies and resection specimens.
3. Fresh and Frozen section/intraoperative consultations.
4. Bone Marrow biopsy interpretation.
5. Special stain and immunohistochemistry analysis.
6. ER and PgR immunohistochemistry and onsite path interpretation.
7. Oral pathology.
8. Dermatopathology.
9. Hematopathology

II. TISSUE SUBMISSION:

Human tissue and foreign material removed in the operating rooms, wards, clinics, and emergency room, with some exemptions as listed below, must be sent to the Histology Laboratory for examination. Instructions for submission of routine tissue specimens follow. Some tissue requires special handling; please refer to the **SPECIAL TISSUE SUBMISSION CONSIDERATIONS PARAGRAPH** of this instruction.

If there is any question regarding appropriate handling of tissue specimens, call Histopathology at ext. 3-1524/1568 for instructions or contact a pathologist. The duty pathologist can be reached at pager 988-9533

A. ORDERS, LABELING, AND CONTAINER REQUIREMENTS:

1. **All specimens will be submitted with either a CHCS order entry document or a Tissue Examination Request [NAVHOSPPTSVA 6510/44 (Rev 5/93)],** which must be completely filled out with the provider's full name, the patient's first and last name, social security number with FMP, age, ward/clinic/MOR, specimens anatomic site, TWO SUBMITTING STAFF'S INITIALS, specimen identifier (A, B, C, etc) if more than one specimen is to be submitted, and duty station with phone number for active duty personnel. In addition, pre-operative diagnosis should be included with pertinent clinical data. **Note: All tissue specimens submitted to Histology from internal NMCP sources must have 2 verifying initials on the specimen containers. If they don't, the specimen will not be accepted. This is command policy. In addition, all patient and specimen source information must be on the specimen container.**
2. **When placing the order in CHCS, the ordering provider must verify that the Patient's name, FMP, social security number, date of birth and specimen source on the specimen container are correct.** Specimens from different body sites must be placed in separate, completely labeled, containers.
3. Surgical Pathology specimens must be labeled and requisitions prepared in the room where the surgical procedure is performed. The ordering provider must ensure that the specimen container(s) are correctly labeled with complete and correct patient information, including full name, FMP, SSN, and date of birth, and with the correct

specimen identifier (A, B, C, etc) and specimen source (body site). The **provider should verify that the specimen identifier(s) (A, B, C, etc) and body sites in the orders correspond to the identifier(s) and body sites on the specimen container(s.)** ***Note:*** ***Routine specimens should be submitted in adequate fixative (10% neutral buffered formalin). A volume of fixative 10-20 times the volume of the tissue specimen submitted is required for optimal fixation. In cases where fixative has not been added, the histopathology technician will add fixative to the container.***

4. For ships and branch clinics that mail surgical specimens to Naval Medical Center, Portsmouth, a leak proof screw top container that seals tightly must be used in addition to some type of absorbent material in order to avoid fixative leaking during shipment. Fixative leakage results in inadequate tissue preservation, and histological detail is destroyed. Tissue submission request chits should be separate from the tissue container to protect from leakage.

B. SPECIMEN DELIVERY:

1. All specimens should be delivered to the Laboratory by authorized personnel who are trained to handle these specimens properly.

2. During normal working hours (0600-1700, Monday through Friday), specimens should be submitted directly to the Histology laboratory and time stamped on the CHCS order entry document or the Tissue Examination Request NAVHOSPPTSVA 6510/44 (Rev 5/93) upon arrival.

3. Specimens submitted to histology after 1700 Monday through Friday and on weekends and holidays must be submitted to Specimen Processing, Laboratory Medicine Services. The specimen must meet all above specimen acceptance requirements upon arrival.

4. A Histology technician will sign for receipt of specimens between the hours of 0600 and 1700 Monday through Friday. Specimen Processing will sign for receipt of specimens from 1700 to 0600 Monday-Friday and on weekends and holidays. The submitting location is urged to keep a log.

C. SPECIMENS EXEMPT FROM SUBMISSION REQUIREMENT:

The only specimens exempt from submission to the histology laboratory are those listed below. With the exception of bullets and missiles, any specimen may be submitted to the laboratory at the discretion of the clinician. Any specimens not submitted to the laboratory should be clearly described and documented in the clinical record.

1. Bullets and other missiles should be maintained with a chain of custody form and given directly to Security for legal purposes.

2. Teeth, liposuction contents, inter-vertebral disc material, and infant prepuces need not be submitted.

3. Grossly normal placentas need not be submitted. Submission of placentas is at the discretion of the Obstetrics and Gynecology department.

4. Orthopedic devices and foreign bodies need not be submitted but should be clearly documented in the clinical record if not submitted.

D. SPECIMENS EXEMPT FROM MICROSCOPIC EXAMINATION:

1. Medical devices, including orthopedic hardware and foreign bodies are submitted for gross diagnosis only. In the case of serialized medical hardware, the manufacturer and serial number will be included in the pathology report.

2. Some tissue specimens, such as traumatic amputations, kidney stones and grossly normal tonsillectomy specimens from children under 12, may not require microscopic examination. The pathologist responsible for the case will determine at the time of gross examination whether supplementary microscopic examination is indicated.

III. SPECIAL TISSUE SUBMISSION CONSIDERATIONS:

A. Bone marrow aspirates with bone biopsies.

1. Should be accompanied by tissue Examination Request.

2. Coordinate with Special Hematology Branch for assistance with collection and proper specimen handling.

3. Bone marrows are delivered directly to the Histology Branch.

NOTE: Never, under any circumstances, deposit a bone marrow specimen on the counter in Histology without notifying a Histology technician.

Contact the clinical hematologist or Special Hematology x 3-1577 for further information and scheduling.

B. Breast tissue:

All Breast tissue must be submitted with a formalin fixation sheet.

1. **Mammographic directed breast biopsies:**
Request on Tissue Examination Request. The X-ray technician assigned will assist with the mammogram procedure brings the tissue to the Pathology Department. This tissue must be submitted fresh (no fixation) to mammography for x-rays. After x-rays are taken, fresh specimen is brought to Histology. Grossing Pathologist is notified.

2. **Needle core/mammotome biopsies**:
Submit in an appropriate amount of formalin. For biopsies performed for calcifications, a specimen radiograph should accompany the specimen.

3. **All other breast tissue specimens**, (including those requiring radiologic examination, such as wire directed biopsies):
Submit without fixative. Specimens should be delivered to the histology laboratory as quickly as possible in order to be examined by a pathologist and must be transferred into formalin in under 1 hour. This ensures that tissue requiring hormone receptor assays and gene amplification studies is handled in accordance with current formalin fixation guidelines for those studies. If a specimen radiograph is available, the radiograph should accompany the specimen.

C. Cone biopsy of cervix:

1. Request on Tissue Examination Report.

2. Prior to placing the tissue in formalin, the surgeon should open the specimen at the anterior midline (twelve o'clock position) of the cervix and indicate such with a suture.

3. After this, pin the specimen flat on a tongue depressor and place in 10% neutral buffered formalin.

D. Fetus:

1. Request on Tissue Examination Report

2. A grossly identifiable fetus less than 20 weeks or 500 gm will have a gross external examination only, and then will be admitted to the morgue. If an "Authorization for

Autopsy" is received the specimen will be evaluated as a surgical pathology accession (at the discretion of the pathologist). All other fetuses are directly admitted to the morgue. Postmortem examination will be conducted on any fetus over 20 weeks or 500 gm with a properly completed autopsy permit.

E. Ophthalmic enucleating specimen (Eyeballs):

Naval Medical Center Portsmouth does not have an Ophthalmologic Pathologist. Complex ocular specimens will receive extra-departmental evaluation. Contact the duty pathologist at pager 988-9533 to discuss the case prior to the surgery.

1. Submit in 10% neutral buffered formalin with Tissue Examination Request.

F. Kidney Biopsies for non-neoplastic kidney disease:

Kidney Biopsies for non-neoplastic kidney disease are sent out to a reference lab for diagnosis. The department performing the procedure ideally notifies the Histology department at 953-1523/1526, or contact the duty pathologist at pager 988-9533, at least 24 hours in advance of the biopsy in order to coordinate technical support for biopsy collection to ensure proper handling. Be prepared to provide the date, time and location of the biopsy. Three Biopsies should be submitted in three different fixatives for a complete evaluation. Should a procedure be performed in an emergency basis, every effort will be made to coordinate technical support.

1. Complete the **Renal Biopsy Registry Sheet** that will accompany the specimen.

2. When available, the reference laboratory's report is transcribed into COPATH.

G. Kidney Biopsy:

1. Request on Tissue Examination Report. This is coordinated between the Nephrologist and special stain histotechnologist.

H. Kidney Stones:

Kidney stones for chemical analysis are submitted to histology to be grossed then they are sent out by the Mailout Division for chemical (gross only diagnosis) analysis. There must be two orders placed in CHCS one for tissue exam and one for chemical analysis. The chemical analysis will only be available in CHCS.

I. Lymph nodes:

1. Request on Tissue Examination Report.

2. The lymph node should be submitted. Do not wrap in gauze. The pathologist will determine if frozen sections are indicated. Touch preparations will be performed as necessary. If lymphoma is suspected, a lymph node protocol may be performed.

3. **Lymph nodes submitted to rule out metastatic carcinoma**, including sentinel nodes, can be submitted in formalin. Sentinel nodes must be clearly labeled as such.

4. **Lymph nodes submitted to rule out lymphoma** should be sent to the histology laboratory without fixative. Coordination with the pathologist responsible for the case, in advance of the surgery, is encouraged in order to prioritize allocation of tissue for various studies based on the clinical scenario. **Please contact the Histology department at 953-1526 or 1527, or contact the duty pathologist at pager 988-9533, and ask to speak with the Pathologist on Frozen Sections for the day the biopsy is to be taken.** The pathologist will determine what studies are indicated based on the clinical findings. Touch preparations, frozen section examination, immunophenotype by flow cytometry, and molecular studies will be performed as indicated. A full lymph

node protocol generally requires at least one cubic centimeter of tissue. Less material will result in "triage" of tissue with some studies left out.

5. If cultures are requested in addition to histopathology, the lymph node should be submitted to Histology in a sterile container with the properly completed culture request forms. Additional material should be submitted whenever possible in a separate sterile container with the appropriate tissue culture requests completed.

J. Testicular biopsy for Infertility:

1. Submit on Tissue Examination Report with the time that the tissue was immersed in the fixative written at the top of the chit. Bring to the laboratory as soon as possible.

2. Bouin's solution is the fixative of choice and can be acquired prior to the biopsy from Histology. Notify Histology at Ext. 3-1526, 1527.

K. Uterus:

1. Request on Tissue Examination Report.

2. Expose the endometrial cavity along its entire course prior to fixation by opening along the lateral margins (bivalving) along a forceps or probe inserted into the endometrial canal. The entire uterus should be covered by formalin.

3. Those specimens requiring specific pathologic procedures, such as pinning of the cervix or mapping of adenocarcinoma of uterine corpus, should be submitted fresh and unaltered. Any of the Pathologists should do sectioning after surgical removal of the specimen.

4. Those specimens submitted to rule out or stage malignancy should be submitted without fixative and unaltered. Any sectioning should be done by the pathologists after surgical removal of the specimen.

L. Muscle biopsy:

1. A Histopathology technician and Pathologist should be consulted to schedule a date and time. Contact the histology section at 3-1523, 1526, or 1527 or the duty pathologist at pager 988-9533 as far in advance of the procedure as possible, at least 48 hrs, to coordinate tissue submission.

2. Submit specimens as indicated on muscle biopsy protocol, accompanied by tissue exam request with appropriate history.

3. Three or four pieces of muscle should be received in separate containers labeled A, B, ETC. (Two pieces in clamps and one piece not in clamp for snap freezing for AFIP; one piece not in clamp to be snap frozen for ATHENA if requested).

4. Specimen must arrive in the histopathology department fresh/unfixed and **not in saline**. Freezing tissue that is in saline will comprise diagnostic value of the biopsy.

5. The specimen must arrive in the histopathology department within 10 minutes of it leaving the operating room.

M. Mucosal and skin biopsies for Direct Immunofluorescent studies:

Consult a Pathologist and the special studies Histotechnologist before performing the procedure.

Note: ***Skin or mucosal biopsies obtained for Direct Immunofluorescent (DIF) studies are mailed to a reference laboratory for processing and evaluation. These biopsies require special fixative and should not be placed in formalin.***

1. Request on Tissue Examination Report.

2. Pick up the request form and required fixative (Michel's solution) from histology prior to collection the specimen.
3. A completely filled out reference laboratory request and SF15 or printed CHCS order must accompany the specimen.
4. Place the biopsy in the tube of fixative and label it with the patient information and specimen source.
5. Deliver the completed request and the specimen to the lab. Call Ext. 3-1524 for further information.

N. Nerve biopsy:

A Pathologist should be consulted to schedule the date and timing of the procedure. Contact the histology section at 3-1523 or 1526 or the duty pathologist at pager 988-9533 as far in advance of the procedure as possible, at least 24 hrs, to coordinate tissue submission.

1. Request on Tissue Examination Report.
2. The neurologist, neurosurgeon and/or clinician requesting the tissue evaluation must provide complete patient history.
3. Collect a 1.2 to 2.0cm nerve biopsy.
4. The specimen should be submitted fresh and tied down on a tongue depressor, with the proximal end labeled. Place specimen in a sterile screw top container.
5. Specimen should be accompanied by a properly labeled tissue exam request.
6. **Do not place the specimen in formalin, wrap in gauze or place in saline.**

O. Bronchial biopsy and/or open lung biopsy in immunocompromised patients designated for GMS stain, AFB, and Legionella workup:

1. Notify Histopathology as soon as procedure is anticipated.
2. Specially trained laboratory personnel must process open lung and bronchial biopsies. Biopsies done during the first part of a normal working day can be processed expeditiously. Biopsies done in the late afternoon, evenings, and weekends require coordination. Advanced notification of an anticipated open lung or bronchial biopsy allows more time to plan for optimal technical support to handle these important biopsies.
3. If microbiology testing is desired the biopsy specimen must be submitted fresh.

P. HIRSCHSPRUNG'S PROTOCOL:

Submucosal suction biopsies of colon. Four biopsies, two from 2cm and two from 4cm above the pectinate line should be submitted for optimum diagnostic results. Lesser amounts will be processed, with priority to formalin fixed sections if insufficient tissue is available to accomplish the entire protocol.

1. One biopsy from each level should be submitted fresh, placed on a saline moistened Telfa pad or paper towel for freezing and one should be in 10% formalin.
2. Specimens must be **immediately** (within 10 minutes of collection) delivered to histology to minimize deterioration and drying of the fresh tissue.

Q. BIOPSY FOR CILIARY DYSKINESIA:

1. Pulmonary/bronchoscopic biopsy specimens are acceptable and should be fixed in glutaraldehyde at the time of biopsy. Glutaraldehyde can be obtained from the histology lab on the day of biopsy.

2. For ENT specimens, larger biopsies from adenoidal (nasopharyngeal) mucosa are preferred and should also be fixed in glutaraldehyde.
3. If the submitting provider requests evaluation for cilia at the time of biopsy, he'she should discuss the case with the pathologist on the frozen bench the day of the procedure. The specimen should be submitted fresh in a properly labeled specimen container immediately after biopsy to avoid drying. Very light touch preps should be performed and air dried. DO NOT ALLOW THE BIOPSY TISSUE TO DRY DRUING SLIDE PROCESSING. Do a diff-quik stain on the air-dried slide. Ciliated mucosa is seen if present. If adequate tissue is present, it may be divided between glutaraldehyde and formalin fixative for processing. If biopsy material is very small, fix in glutaraldehyde and send to JPC for evaluation.
4. NOTE: Trying to handle and touch prep very small pieces of tissue leads to rapid overdrying of the specimen, and any cilia present will desiccate, even with the best sampling. Small specimens should be placed directly in glutaraldehyde in the OR. Glutaraldehyde may be obtained from histology on the day of the procedure.

R. SEMINAL FLUID – ELECTRON MICROSCOPY FOR SPERMATIC IMMOTILITY:

1. Spin seminal fluid samples and fix pellet in glutaraldehyde.
2. The responsible pathologist should interface with Mailout processing technician and the consultant at the reference lab to ensure the specimen is handled properly.
3. Samples may be sent to the following lab:

   Ivan Damjanov
   c/o Marsha Danley
   Department of Pathology
   The University of Kansas
   School of Medicine
   3901 Rainbow Blvd.
   Kansas City, KS 66160
4. Contact information for Dr. Damjanov is tel.(913) 588-7090 or FAX (913) 588-8780; email IDAMJANO@kumc.edu

S. Any tissue which requires special handling procedures:

1. Consult a pathologist first **before the** biopsy or procedure. The duty pathologist can be reached at pager 988-9533.

IV. SUBMISSION OF TISSUE WITHOUT FIXATIVE (FRESH), INCLUDING TISSUE FOR INTRA-OPERATIVE CONSULTATION AND FROZEN SECTIONS:

A. It is desirable, when possible, for the surgeon to consult with the pathologist prior to intra-operative consultation. This will ensure that all appropriate diagnostic aids (special fixatives, imprints, cultures, x-ray findings, etc) are available at the time the specimen is delivered to the histology laboratory.

B. Intra-operative examination(s) may be scheduled in advance by consultation with a pathologist or by placing "F.S." or "Frozen Section" on the operative schedule. If a request for intra-operative consultation is anticipated outside of normal working hours (0600-1800) Monday – Friday, on weekends or Holidays, prior co-ordination with the duty pathologist, pager 988-9533, is required.

C. A completed TISSUE EXAMINATION REQUEST [NAVHOSPPTSVA 6510/44 (Rev 5/93) or Essentris TISSUE EXAMINATION REQUEST indicating the need for intra-operative consultation with appropriate history and request should accompany all requests for frozen sections. The request form must have written indications of the studies requested. If not so indicated, specific studies needed may not be done.

D. It is the responsibility of the OR runner to deliver all fresh tissue specimens and tissue exam sheets or CHCS order entry document to the Surgical Pathology branch within 10 minutes of departing the OR. Fresh specimens for intra-operative examination and Culture may also be submitted via the Pneumatic Tube System (See NAVMEDCENPTSVAINST 11301.1C). If cultures are requested, the tissues should be submitted with the appropriate culture request forms. During the hours of 0600-1700, Monday through Friday, all fresh tissue specimens submitted without fixative are to be delivered directly to the Surgical Pathology branch and given to a Histology technician. In the event that cultures are also requested on the tissue specimen, the OR runner still must deliver the fresh specimen to Surgical Pathology branch. The Pathologist will obtain the cultures requested, the sterile specimen can be submitted directly to the Microbiology branch and the Microbiology technician will culture the entire specimen.

E. If the entire specimen is for culture only, and no tissue examination is requested, the sterile specimen can be submitted directly to the Microbiology section and the microbiology staff will culture the entire tissue specimen.

F. During the hours of 1700-0600, Monday through Friday, and on Saturday, Sunday and holidays, specimens should not be delivered without fixative unless the duty pathologist (pager 988-9533) has been consulted. If fresh specimens are delivered outside of normal working hours, or in the event a histology technician cannot be located, the OR runner will deliver them directly to the Specimen Receiving desk. The Senior Laboratory Technician will sign for the fresh tissue specimen and immediately notify the duty pathologist that there is a fresh tissue specimen for examination.

G. It is desirable when possible for the surgeon to consult with the Pathologist prior to submitting a frozen section. This will ensure that the proper diagnostic aid is available at the time of initial biopsy.

Note: Specimens consisting chiefly of mature adipose tissue does not process well for frozen sections. In some cases, the Pathologist may have to forgo frozen section of adipose in favor of formalin fixation and normal processing.

H. Intra-operative consultations that are scheduled and then canceled should be promptly reported to Histology branch.
NOTE: Specimens consisting chiefly of mature adipose tissue do not process well for frozen sections. In some cases, the pathologist may have to forego frozen section of adipose tissue in favor of formalin fixation.

Note: Considerable risk and unnecessary exposure attends the dangerous and unwarranted process of opening lung lesions in the operating room. Surgical masks offer inadequate protection in this circumstance. Additionally, inadequately prepared microbiological cultures often result and unsuspecting laboratory personnel are unnecessarily exposed. Therefore, it is

requested that the intact specimen be sent to the Laboratory in sterile saline-moistened gauze in a sterile container. A Tissue Examination Request Form and Culture Request Forms for Mycobacteria, fungus, and bacteria should accompany the specimen. The pathologist will examine the lesion and divide it for culture and histopathology. Granulomata will not be processed for frozen section, as recent reports have emphasized the danger of this procedure (MMWR 30:73). Report of the quick stains for organisms as well as the H&E touch preparations, although not definitive, will be made via routine frozen section reporting channels.

I. All specimens submitted from patients with suspected infectious diseases (AFB, Hepatitis, AIDS, and fungal infections) must be labeled with an infectious disease label.

V. REQUESTS FOR SURGICAL PATHOLOGY MATERIAL FROM OUTSIDE INSTITUTIONS:

On request, the Laboratory's Administrative Assistant will prepare and mail the proper correspondence requesting loan of surgical and autopsy material pertinent to management of patients hospitalized at NMCP. Medical officers desiring such services must make available as much detailed information as possible concerning the exact location and date of the patient's prior hospitalization and may require a signed patient consent. The laboratory secretary can be reached at X3-1712.

VI. TRANSMISSION OF SURGICAL MATERIAL TO OTHER HOSPITALS:

It is sometimes necessary to send surgical pathology material obtained from patients at NMCP other hospitals that the patient has been transferred to for continuation of medical care. All such requests must be forwarded by the Laboratory's Administrative Assistant for processing. In exceptional cases, the patient will be allowed to hand carry the requested material together with a copy of the final report to the medical facility providing additional medical care.

VII. REVIEW OF SURGICAL MATERIAL:

Physicians are encouraged to visit Histology to review with the pathologist microscopic slides prepared from the tissue that they have submitted. Times may be arranged by contacting the responsible staff pathologist in advance.

VIII. DISCARD OF GROSS SURGICAL SPECIMENS:

Surgical tissue is periodically discarded from Surgical Pathology. This process occurs only after a given specimen has been held at least two weeks from the time the case is signed out. Specimens may be held for longer periods of time (in the event of interest, need or for medico-legal purposes). Orthopedic hardware implants, etc., that are not requested for return by the physician and/or patient will be retained for two weeks unless required for other purposes. Non-tissue material requested to be saved by patients will be held for two weeks. Patients must retrieve the indicated non-tissue specimens. For safety reasons tissue must not be given to a patient.

IX. TECHNICAL PROBLEMS WITH SURGICAL SPECIMENS:

Rarely, during the processing of tissue in the histology laboratory, unforeseen technical problems may arise that will render the tissue unsuitable for microscopic diagnosis. In those situations, the pathologist concerned will notify the clinician who performed the biopsy (or appropriate clinical staff if the clinician is not available) by telephone as soon as the problem is discovered. The completed report will include documentation of the telephone conversation in the "comments" section of the surgical pathology report.

MORGUE AND AUTOPSY POLICIES

I. AUTOPSY PATHOLOGY SERVICES OFFERED AT NMCP:

A. Medical autopsies with signed consent as requested.

B. Forensic autopsies through the Regional Armed Forces Medical Examiner as required.

C. Dissection and tissue processing.

D. Microscopic evaluation of autopsy material.

E. Processing in support of off-site medical examiner cases.

II. MORGUE POLICIES:

A. Preparing the body for Morgue Admission:

1. Adult:

Complete 3 Deceased Remains Tags, NAVMEDCEN 5360/3 (Rev. 8/95)by completely filling out the tags with the patient identification, Rank/Rate, SSN, Status, Date of Death, Time of Death, Clinic, Diagnosis, Providers name and providers/charge nurse signature on each tag. This information may be handwritten on each tag or a computer generated label containing the information may be applied to each tag to identify the remains. Attach one tag to the right wrist, one to the right great toe of the remains. (Always use universal Precautions in handling body). The remains should come to the morgue placed in a body bag and a Deceased Remains Tag must be placed on the outside zipper of the body bag. A gurney sheet should be placed over the body and the body can then be transported to the morgue. The ward of clinic may borrow a covered gurney so it is not obvious to patients that a patient has passed.

a. Autopsy Authorization Signed:

When a body is presented to the morgue (for autopsy) do not remove tubes, IV's, drains or anything else from the remains. Tie a knot or clamp all tube endings to secure them in place and prevent leakage of body fluids.

b. No autopsy is requested:

Remove all tubes, IV's, drains or anything else deemed appropriate will be removed from the remains on the ward. Remains should be cleaned/washed in preparation for release to the funeral home by ward staff

2. Infant/Fetus:

Any ID bracelets or tags put on the infant on the ward should be left in place. Complete 3 Deceased Remains Tags, NAVMEDCEN 5360/3 (Rev. 8/95) by placing the patient identification on each tag. The patient identification information may be handwritten on each tag or a computer generated label may be applied to each tag to identify the remains. Attach one tag to the right wrist and one to the right ankle. The tag should include the infant/fetus name, prefix (if live birth), mother's name, sponsor's SSN, and date of birth. (Always use universal precautions in handling body). The remains should come to the morgue with appropriate, non-leaking outer wrapping, labeled with the 3rd tag. The infant should be transported to the morgue wrapped (covered) in a blanket or chux either in a basket or infant crib. Under no circumstances should deceased fetuses or infants be carried to the morgue.

a. Autopsy Authorization Signed:

When the remains of an infant or fetus are presented to the morgue do not remove tubes, IV, drains or anything else from the remains. Tie a knot or clamp all tube endings to secure them in place and prevent leakage of body

fluids. If not autopsy then the tubes should be removed on the ward. Bodies should not be bathed.

b. No Autopsy is requested:
Tubes, IV's, drains or anything else deemed appropriate should be removed from the remains on the ward. Remains should be cleaned/washed in preparation for release to the funeral home.

III. AUTOPSY POLICY:

A. BACKGROUND:

1. Definition: An autopsy is a postmortem examination performed by a pathologist to:

a. Determine the cause and manner of death.

b. Explain and/or confirm clinical findings and impressions.

c. Evaluate the effectiveness of antemortem therapy.

2. As such, the autopsy functions as a teaching device for clinicians and clinical support staff, and serves a quality improvement function for treatment rendered in the hospital.

B. POLICY:

1. Permission for Autopsy:

a. Manual of the Medical Department, Chapter 17-18 and NAVMEDCENPTSVAINST 5360.1C should be consulted for details concerning the proper handling of deaths and related matters. The Decedent Affairs Office is available for assistance at Ext.3-2617. IT MUST BE REMEMBERED THAT AN AUTOPSY WILL NOT BE PERFORMED UNLESS A VALID AUTOPSY PERMIT IS COMPLETED. IT IS THE RESPONSIBILITY OF THE ATTENDING PHYSICIAN TO ENSURE THAT THIS CONSENT HAS BEEN PROPERLY OBTAINED AND DOCUMENTED.

b. In the case of dependents, retirees, and civilians, permission to perform an autopsy at Naval Medical Center Portsmouth must be obtained from the deceased's primary next of kin (NOK). This permission cannot be granted before death occurs. In addition, any powers-of-attorney that may have been granted to anyone else are voided upon death and the authority to grant permission for an autopsy reverts to the primary NOK. The Decedent Affairs Office can render assistance in determining the identity of the primary next of kin.

c. Permission for an autopsy is obtained using SF523. The consent must be obtained by a physician, and this physician, plus at least one other staff member, must sign the form as witnesses. It is imperative that the family member be apprised of the nature of the autopsy (i.e., informed consent obtained) and their desire for any limitations of the autopsy be determined (i.e., head only, chest only, etc.). If such limitations are desired, they must be described in the appropriate place on the SF523. If no limitations are desired, then "NONE" must be written in that space. The form must have the appropriate date and time, and the relationship of the person signing the form to the deceased must be listed. The absence of any of the above will cause the permit to be invalid and the autopsy delayed while these discrepancies are rectified.

d. For Active Duty Deaths, permission for an autopsy can be granted by OAFME, the Office of the Armed Forces Medical Examiner (located in Rockville, MD; phone number-301-319-0000) or the member's Commanding Officer. The NOK is typically not approached for permission to perform an autopsy in the case of active duty deaths.

e. For all deaths in which the manner is other than natural (homicides, suicides, accidents) and in all pediatric deaths, the Regional Armed Forces Medical Examiner should be contacted to discuss any potential medicolegal issues. **Non-natural deaths which occur in NMCP fall under the jurisdiction of the Tidewater Office of the Chief Medical Examiner of the State of Virginia (TOCME).** These cases must be released by the Medical Examiner prior to autopsy or other disposition of the body, either by contacting the OAFME, or by contacting the Virginia Medical Examiner directly at 683-8366.

f. Although it is recommended that a request for autopsy be made on every death, it is recognized that performing an autopsy on every death may not be possible. Deaths in which an autopsy should be especially encouraged are as follows:

1) Deaths in which the cause is uncertain on clinical grounds or when there are unexplained medical complications.

2) Cases in which autopsy may help allay concerns and provide reassurance to the family and/or public concerning the deaths.

3) Deaths occurring during or following diagnostic or therapeutic procedures.

4) Death of patients participating in clinical trials.

5) Apparently natural deaths of sudden, unexpected or unexplained nature either waived by or not subject to a forensic medical jurisdiction such as:

a) Persons dead on arrival at a hospital

b) Deaths occurring within 24-hours of hospitalization

c) Deaths of patients apparently injured while hospitalized.

6) All neonatal, pediatric, and obstetric deaths.

7) Deaths arising from high-risk infections or contagious disease (see below).

8) Deaths involving transplant patients.

9) Deaths suspected as due to environmental or occupational hazards/accidents.

g. In Deaths Involving Radioactivity, the Radiation Safety Officer must be notified and NAVMEDCENPTSVA INST 6470.2C pertains. These cases are generally discouraged for autopsy due to risk to laboratory personnel.

h. Cases involving suspected Creutzfeld-Jacob Disease (CJD) or other spongiform encephalopathies are typically limited to internal examination of the head only. Consultation should be sought with the Head, Autopsy Service at the earliest possible point so that adequate planning and preparation can occur.

2. Fetal Autopsies:

a. As defined in the Code of Virginia (Section 32.1-249), fetal death means death prior to the complete expulsion or extraction from its mother of a product of human conception, regardless of the duration of pregnancy; death is indicated

by the fact that after such expulsion or extraction the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

b. It is the policy of the laboratory that fetuses are to be handled in accordance with the wishes of the parents, and that the wishes of parents are determined prior to any invasive examination. Autopsies are frequently very useful as a means of delineating congenital defects and other problems, which may have resulted in an intrauterine fetal demise. An autopsy is also extremely helpful in order to document the absence of any discernible heritable anomalies and thereby allay parent's fears. However, it must be remembered that an autopsy is an invasive procedure and as such, will not be performed without the express permission of the parents. With these considerations in mind, the following polices are in effect for fetuses greater than or equal to 20 weeks gestational age and/or 500 grams in weight:

1) If an autopsy is desired by the parents, a standard autopsy permit must be signed as described above. It is not necessary that both parents sign. The fetus and placenta should be transported to the morgue along with the autopsy permit and a copy of the inpatient chart.

2) If no autopsy is desired, no permit is submitted, and/or the fetus is less than 20 weeks/500 grams, the fetus will receive a gross (external) examination only, with anthropometric measurements made. The attending physician must place an order into CHCS or AHLTA requesting that surgical pathology be performed. This external examination will be reported in a surgical pathology report.

c. It is important to contact the Decedent Affairs office when a fetal death has occurred, so that they can assist with counseling parents on disposition options.

d. It will occasionally be the case that fetal tissue will only be recognized after examination in the laboratory. In these cases, the laboratory will contact the Decedent Affairs office, which will in turn then contact the parents to discuss disposition options.

3. Performing of Autopsies:

a. Scheduling (Except as directed by the Laboratory Director or duty pathologist): Routine autopsies are performed **5** days a week, Monday through Friday, during normal working hours. Generally, autopsies will not commence after 1400. Autopsies which will require performance at night or on weekends because of special circumstances may be arranged by contacting Pathology during regular working hours or the duty pathologist in the evening or on weekends.

b. Submission: All information, including valid authorization, in-patient and out-patient records, results of investigations, and circumstances surrounding death must be delivered to Decedent Affairs and be available to the pathologist before an autopsy will be performed. The pathologist must be informed of any known hazards to performing the autopsy, specifically including, but not limited to, infectious diseases and radioactive contamination. Except in special cases determined and indicated by the pathologist, remains will be prepared

and transferred to the morgue as described in NAVMEDCENPTSVAINST. 5360.1 series.

4. Miscellaneous considerations:

a. Any person involved in the care of the patient may observe an autopsy if the Head, Autopsy branch is consulted and gives permission. NMCP students, interns, residents and staff may observe autopsies at the discretion of the pathologist performing the autopsy. **The attending physicians and the remainder of the ward team are encouraged to attend autopsies on their patients as their schedules permit.**

b. There are no appropriate facilities within the morgue for the viewing of remains by family members. Therefore, after the remains have left the ward and been admitted to the morgue, they will not be available for viewing by the family until they have reached a funeral home of the family's choosing. In addition, the remains cannot be transported to any other area of the hospital once they have been admitted to the morgue. There are no exceptions to this policy.

c. A Provisional Autopsy Report should be issued within two (2) working days of performance of the autopsy. The completed autopsy protocol must be completed within the time period specified in the medical staff bylaws, which is currently one (1) month (or 30 working days) for routine autopsies and three (3) months for complicated cases unless there are special studies pending or unusual circumstances. Complicated autopsy cases are defined as those that require additional testing or consultation beyond routine gross and microscopic analysis. Examples include the following, but are not limited to these: toxicology, external consultation, immunopathology and microbiology studies.

MOHS MICROGRAPHIC SURGERY

I. PURPOSE:

A. The information in this manual is provided to show current practices within the Dermatology Mohs Surgical Section. Procedures are in compliance with the requirements of the JC and the College of American Pathologists. Mohs Micrographic surgical services are offered in the NMCP Dermatology Clinic. Only a credentialed Mohs Surgeon is allowed to collect, submit to the Mohs Laboratory and interpret the slides made.

II. OBTAINING SPECIMEN:

A. Original histopathology reports are reviewed by the Mohs surgeon. If slides are not available (i.e., patient from another institution), a copy of the original pathology report will be obtained and filed with the patient records. This report gives the Mohs Surgeon the location and type of tumor.

B. Site is confirmed by Mohs Surgeon.

C. Patient is prepped for procedure.

D. Lesion site on the patient is precisely marked with indelible ink (gentian violet, methylene blue, skin marker, etc).

E. Debulking of the tumor is performed as necessary with sharp curettage or by scalpel.

F. The tumor area, with a narrow 1-2 mm margin, is encircled. Orienting nicks are made with the scalpel onto the tissue specimen at appropriate points, as if around a clock face. At the minimum an orienting single nick is placed at the 12:00 o'clock position; additional nicks, to include double scoring at the 12:00 o'clock position, may be necessary at 03:00, 06:00, 09:00 etc, to best orient and identify the tissue specimen.

G. Removal of a thin layer of tissue, with a beveled edge and appropriate surrounding 1-2 mm margin. A thin specimen allows the tissue to be mounted so that the lateral and deep margins can be examined in the same plane under the microscope after frozen section processing.

H. A corresponding Mohs Accessioning Map is mated to the excised layer of tissue. The Mohs Accessioning Map indicates the location within the specimen of scalpel nicks, division of the specimen into sections, and markings of the inked sides. The map will contain patient name, SSN, the unique Mohs Accession/case number, and date.

I. The layer of tissue removed is oriented on a piece of marked gauze and transported to the Mohs laboratory in a labeled Petri dish for sectioning and processing, with patients last name, Mohs accession number, and site. Orientation of the tissue is maintained when placed on the gauze.

J. Once the layer of tissue removed is transferred to the Mohs laboratory technician who processes the tissue and provides the Mohs surgeon with slides a diagnosis is made.

CYTOLOGY GENERAL INFORMATION

I. PURPOSE:

To provide general information on policies and procedures to be followed when submitting specimens for cytologic examination. The following cytopathology services are offered at NMCP:

A. Cytologic examinations for GYN and Non-GYN specimens.

B. Fine needle aspiration procedures in the laboratory dept by appointment (953-1623).

C. Fine needle aspiration technician on call for clinic and bedside procedures during normal working hours scheduled through the cytology dept (953-1744).

II. INTRODUCTION:

It is the endeavor of the Cytology team to provide the most accurate cytologic evaluation possible. Each staff member can assist Cytology in performing this task by ensuring that specimens are correctly labeled and that all portions of the proper requisition chits are completely and accurately filled out. Pertinent clinical history, including any chemotherapy or radiotherapy, is essential for precise cytologic interpretations.

III. GENERAL INFORMATION:

A. LOCATION AND HOURS:

1. Cytology is located in the Laboratory, Building 2 at the NAVMEDCENPTSVA compound. The processing room telephone number is 953-1667, and the screening room is 953-1744/1745. Normal operating hours are 0730 - 1600, Monday - Friday.

B. CYTOLOGY REQUEST FORMS:

1. A request for GYN or NON-GYN cytology evaluation constitutes a request for a clinical consultation by the Laboratory department, and should be submitted in accordance with standards appropriate for professional consultations.

2. The following are the only acceptable forms for requesting cytologic evaluations:

a. CHCS specimen order entry.

b. Gynecological Exfoliative Cytology Examination, Form NAVMEDCENPTSVA 6510/3 (Rev 3/00)

c. Non-GYN Cytology Examination, Form NAVMEDCENPTSVA 6510/4 (New 9/83)

3. These forms are available from NAVMEDCEN Forms Control. These forms provide space for patient's name, age, sex, race, FMP and social security number, date, submitting activity, specimen source, clinical history and clinician's signature. ALL OF THE REQUESTED DATA MUST APPEAR ON EACH CHIT SUBMITTED in accordance with Standards for Laboratory Inspection and Accreditation, College of American Pathologists. The cytologic report will be entered into CHCS after results are certified.

4. All appropriate blocks on the form should be filled in using a ballpoint pen (do not use a marker or pencil). All items pertaining to patient and specimen identification are required by laboratory and accreditation standards. These include complete and legible name, SSN with FMP, facility or ward and/or submitting physician's name, and source and nature of specimen. The patient's age, hormonal status, clinical history, last menstrual period (LMP), treatment (hormonal, chemotherapy, radiation, etc.) are necessary for accurate interpretation of PAP smears.

5. If a biopsy was obtained at the same time as the cytologic specimen, please note on the request form so that a cytologic/histologic correlation may be reported.

C. CYTOLOGY REPORT AND GYN CLASSIFICATION CODE:

1. The definitive report for any cytologic specimen is reported in CHCS. This report is the written interpretation of the Cytology Team.

2. The diagnostic report includes:

a. Statement of adequacy.

b. Descriptive diagnosis.

c. Any recommendation for follow-up.

3. Reporting of GYN Cervical/Vaginal Cytology conforms to the format and terminology of the Bethesda System (2001).

D. THE 2001 BETHESDA SYSTEM FOR REPORTING CERVICAL/VAGINAL CYTOLOGICAL DIAGNOSES:

The Bethesda System (TBS) for Reporting Cervical/Vaginal Cytological Diagnosis has been the national standard since it was drafted in 1988. This nomenclature was modified in 1991 and again in 2001. All gynecologic cytology reports issued by Cytopathology, Naval Medical Center, Portsmouth, Virginia will be modified to reflect the latest version of TBS.

Most of the changes are minor, self-explanatory edits that add clarity to the report. There are two (2) main sections to the revised report format:

1. Specimen Adequacy (There are only two choices)

a. Satisfactory for evaluation. The phrase "satisfactory but limited by…blood, inflammation, etc." has been eliminated.

b. Unsatisfactory for evaluation. This category includes cases that have been rejected (e.g., incorrect name or SSN) and **NOT** evaluated; and those cases that have been fully screened and determined to be unsatisfactory due to other factors (e.g., obscuring inflammation).

2. Descriptive Interpretation/Diagnosis:

a. Negative for Intraepithelial Lesion or Malignancy-replaces the phrase "Within Normal Limits."

b. Epithelial Cell Abnormality-Squamous Cells

1) Atypical Squamous Cells of Undetermined Significance (ASCUS).

2) Atypical Squamous Cells of Undetermined Significance, a High Grade Squamous Intraepithelial Lesion cannot be excluded (ASCUS-H).

3) Low Grade Squamous Intraepithelial Lesion (LSIL).

4) High Grade Squamous Intraepithelial Lesion (HSIL).

5) Human Papillomma Virus (HPV) - results to be listed as "Detected" or "Not Detected".

6) Squamous Cell Carcinoma (SCCA)

c. Epithelial Cell Abnormality- Glandular Cells.

1) Atypical Endocervical Cells.

2) Atypical Endometrial Cells.

3) Atypical Glandular Cells.

4) Atypical Glandular/Endocervical Cells, Favor Neoplasia.

5) Endocervical Adenocarcinoma In-Situ (AIS).

6) Adenocarcinoma, Endocervical.

7) Adenocarcinoma, Endometrial.

8) Adenocarcinoma, Not Otherwise Specified (NOS)

d. Other Malignant Neoplasms (specify)

More detailed information is available at the following website:
http://jama.ama-assn.org/current/dtl

E. ABNORMAL REPORTS:

1. Those GYN reports that are suspicious or positive for carcinoma are telephoned to the physician or other health care provider submitting the specimen. Phone calls are made to outlying commands. Non-GYN reports that are suspicious or positive for carcinoma are handled in a similar fashion when warranted.

2. The original reports will then be available in CHCS.

3. Smears that are UNSATISFACTORY due to technical factors should be repeated. Repeat smears may also be requested for smears classed "sub-optimal". The repeat smear should be obtained no sooner than 10 weeks after the original smear.

4. Smears with inflammatory changes and identifiable infectious agents may be recommended for treatment followed by a repeat smear, again at an interval of about 6 month-12 months. Repeating the smear at an earlier interval may increase the likelihood of a false-negative study (the epithelium may be incompletely regenerated).

5. The NMCP Cytology Laboratory will support the American Society for Colposcopy and Cervical Pathology (ASCCP) consensus guidelines for the management of women with abnormal Pap smears. All Thin-prep specimens with an initial diagnosis of ASCUS will have a "Reflex" HPV DNA test performed on patients over 21 years of age. Results of the HPV DNA test will be reported in CHS and AHLTA.

For more detailed information on the ASCCP Guidelines and HPV DNA Test, please refer to the following websites:
http://www.asccp.org
http://www.digene.com/index.html

F. SUBMISSION OF SPECIMENS:

1. During normal working hours, cytology specimens will be brought to Specimen Receiving, Bldg 2. After hours, they will be turned over to the Senior Laboratory Technician (pager 988-9306).

2. The standard care for the PAP test is a liquid based cytology specimen. Glass slides for Pap test will not be accepted.

3. All non-GYN specimen containers must be clearly labeled with the patient's identification data as outlined above. In addition, the following information must also be included on the chit:

a. Date and time of collection.

b. Specimen source.

4. If a body fluid specimen cannot be brought immediately to the cytology processing room, it must be refrigerated, and brought to the Laboratory as soon as possible.

5. All glass slides submitted in 95% ethyl alcohol must be clearly labeled.

6. Glass slides should be labeled prior to obtaining the specimen.

7. Any delay in fixing specimens placed on glass slides will cause drying artifacts that hinder cytologic evaluation.

8. Special considerations for each type of specimen are to be outlined in the appropriate section for each type of specimen.

G. REJECTION/RETURN OF CYTOLOGIC SPECIMENS:

1. Accurate patient and specimen identification is critical. Complete and legible information is required on all forms, and slides must be properly labeled. Missing or incomplete information on the Cytology request forms is cause for return of the specimen and form for correction. Unidentified specimens are cause for rejection. Double-checking specimens and forms prior to submission can avoid most refusals or specimen returns. PAPER IDENTIFICATION LABELS ON SLIDES ARE UNACCEPTABLE.

2. Bloody or body fluid contaminated forms will not be accepted.

3. The cytology staff will make every effort to accession and process these specimens to avoid any delay while corrections are being made.

4. Specimen rejection is necessary in order to provide an accurate evaluation and to insure that a specimen belongs to the intended patient. These requirements comply with the standards of the College of American Pathologists.

H. SPECIMEN FIXATION:

1. Pap smears-Refer to Thin Prep Pap tests.

2. Non-GYN smears should be fixed immediately in 95% ethyl alcohol. This is available from the cytology processing room (room 171210).

3. Other non-GYN fluid specimens will be submitted unfixed. They should be brought to the cytology processing room without delay.

4. Special considerations for fixing of specimens are included in the appropriate sections for each type of specimen.

5. Any questions should be directed to the Cytology Team at 953-1744 prior to obtaining specimens.

I. TURNAROUND TIME FOR CYTOLOGY REPORTS:

1. GYN: Turnaround time for normal, routine pap smears is usually ten days if the specimen is received in the morning. If any significant atypia is present the slide is reviewed, followed by referral to a pathologist, extending the time one to two days. Slides can be expedited and the results obtained the day of receipt if an emergency exists, but the requisition must be clearly marked as such, and not placed inside a group of chits. A phone call is the best method to assure that a “rush” is found and expedited.

2. NON-GYN: Routine specimens received in the morning have a 2 day turnaround time. All NON-GYN specimens are screened by a CYTOTECHNOLOGIST then referred to a pathologist. Fine Needle Aspirations have a turnaround time of two days. Non-Gyn specimens, with the exception of the cellblock, can also be expedited if an emergency exists, with results obtained on the day of receipt.

J. OBTAINING CYTOLOGY RESULTS:

1. Distribution of cytologic examination results is routinely made by CHCS computer.

FEMALE GENITAL TRACT SPECIMEN SUBMISSION

I. PURSPOSE:

To establish policies and procedures governing the proper collection and submission of specimens from the female genital tract.

II. GENERAL RULES IN OBTAINING SPECIMENS:

NOTE: If patient is unable to understand the English language, please contact the OOD desk (x3-5008) for an interpreter.

A. TIMING: It is best to obtain cervical smears at least 10 days to 2 weeks after the menstrual period. This is especially true in women over 40, where the presence of endometrial cells may be a clue to endometrial neoplasia.

B. "Contraindications": It is possible to obtain "routine" cervical smears during a period of bleeding; however, in smears taken during bleeding there is a significantly greater chance that the specimen adequacy will be designated as limited or unsatisfactory due to obscuring blood. If the bleeding is abnormal or there is a question of a cervical lesion, obtaining cervical cytological material is not contraindicated and may be diagnostic.

C. Bleeding and douching within 24 hours prior to taking the specimen are not contraindications to obtaining specimens. Specimens should be obtained when the first opportunity arises. However, these conditions do yield a higher percentage of unsatisfactory smears and the patient should be advised that it may be necessary to repeat the study.

D. The exact site of origin of each specimen should be listed on the Gynecologic Exfoliative Cytology Examination chit. The choices are cervical thin prep or vaginal thin prep.

E. A pelvic examination of the patient should be carried out after obtaining the cytologic specimens.

F. It is generally recommended not to use lubrifex on the speculum when planning to do a Pap Smear. If there is excessive mucus present on the cervix, this may be gently removed utilizing a rectal swab before obtaining the pap smear. Cultures should be obtained after pap smear is done.

G. Multiple devices that are currently in use for cervical/endocervical sampling.

1. Modified Ayre type spatula with extended tip.
2. Ayre spatula used in conjunction with a cytobrush.
3. "Broom" cervix brush.

DO NOT COLLECT SPECIMENS USING COTTON TIP APPLICATORS WITH WOODEN SHAFT.

There is no place for the use of a cotton tip applicator in making a pap smear.

THINPREP PAP TESTS

I. PURPOSE:

A. To obtain a cervical/vaginal specimen for the detection of cervical/vaginal abnormalities to be submitted in a liquid based medium for thin layer slide preparation**.**

B. MATERIALS NEEDED:

1. Endocervical brush/Spatula or Broom-like collection device
2. Vial of PreservCyt Solution
3. Speculum
4. Rectal swab

II. PROCEDURE:

A. PROCEDURE-USING THE ENDOCERVICAL BRUSH/SPATULA:

1. Introduce the speculum **without** lubricant. If necessary, normal saline may be used to moisten the speculum.
2. Moisten the rectal swab with normal saline. Roll the swab across the ectocervix to remove excess mucus and debris.
3. Insert the plastic spatula and place against the ectocervix and rotate 360 degrees.
4. Remove the spatula and rinse the spatula as quickly as possible in the PreservCyt solution. Swirl the spatula vigorously, at least ten times.
5. Discard the spatula.
6. Insert the cytobrush into the endocervical canal and rotate ¼ of a turn (90 degrees).
7. Remove the cytobrush and rinse the brush, as quickly as possible in the PreservCyt solution, swishing 10 times and rubbing the brush against the side of the vial to dislodge cellular material. Discard cytobrush.

Do not leave either collection device in the PreservCyt solution***

8. Tighten the cap so the black line (torque line) is beyond the black line (torque line) on the vial.
9. Record the patient's name (last, first and middle initial), family member prefix (FMP), sponsor's SSN and specimen collection date on vial.
10. Place the order for the ThinPrep Pap test in CHCS (refer to lab SOP).
11. Place the vial in a zip-lock, specimen bag and transport to the laboratory.

B. PROCEDURE-USING THE BROOM-LIKE DEVICE:

1. Introduce the speculum **without** lubricant. If necessary, normal saline may be used to moisten the speculum.
2. Moisten a rectal swab with normal saline. Roll the swab across the ectocervix to remove excess mucus and debris and discard.
3. Insert the central bristles of the broom into the endocervical canal deep enough so the shorter bristles have full contact with the ectocervix.
4. Gently push, and rotate the broom in a clockwise direction five times.
5. Remove the broom and rinse the broom as quickly as possible into the PreservCyt solution by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. To dislodge the cells that have been collected.

6. Swirl the broom vigorously to further release material.

*** **Do not allow the broom to sit in the PreservCyt solution*****

7. Discard the collection device.
8. Tighten the cap so that the black line (torque line) passes the black line (torque line) on the vial.
9. Record the patient's name (last, first and middle initial), FMP (family member prefix) sponsor's SSN and specimen collection date on vial.
10. Place the order for the ThinPrep Pap test in CHCS (refer to laboratory SOP).
11. Place the vial in a zip-lock, specimen bag and transport to the laboratory.

III. REFERENCES:

A. ThinPrep reference manual, CYTC Corp, Boxborough MA.

B. Laboratory Policy and Procedure Manual for Inpatient and Outpatient Care.

THE ENDOCERVICAL SMEAR

A. This technique may be utilized in addition to the cervical scraping smear. This method provides the best and most diagnostic cellular material for early cervical carcinomas or premalignant lesions.

B. A cotton tip applicator is next to worthless for an endocervical sample and should not be used.

C. The preferred device is an endocervical brush (cytobrush).

1. Technique: Place the brush into the endocervical canal and, while rotating the brush, move the brush back and forth within the canal.

2. Making the slide: Roll the brush linearly onto the slide back and forth and rapidly fix with cytology spray fixative or 95% ethyl alcohol.

DIRECT SCRAPING SMEARS

A. These may be utilized in addition to the routine cervical scraping smear if a lesion is visible in the vaginal vault or on the labia.

B. Materials Needed:

1. Cervical spatulas (Ayre scrapers) or tongue depressors.

2. Glass slides (one end frosted). The slides are identified by writing the patient's name, FMP, and last 4 digits of sponsor's social security number on the frosted end of the slides with a soft lead pencil.

3. Speculum (without lubricant).

4. Commercial "Cytologic Fixative" or a bottle of 95% ethyl alcohol.

5. Paper clips to be placed on the frosted ends of the slides if 95% ethyl alcohol is to be used as the fixative.

C. Technique:

1. If the lesion is soft, moist and clean:

a. Scrape the lesion with a tongue blade, cervical scraper or edge of a scalpel blade.

b. Spread the material from the blade onto a clean slide and immediately fix by spraying or immersion in 95% ethyl alcohol.

2. If the lesion is dry or has a necrotic or an inflammatory surface:

a. Gently moisten and remove necrotic debris with a non-absorbent cotton swab that has been dipped in saline.

b. Discard this swab and debris.

c. Scrape the lesion with a tongue blade, cervical scraper or edge of a scalpel blade.

d. Spread the material onto a clean slide and immediately fix by spraying or immersion in 95% ethyl alcohol.

DES EXPOSURE (OFFSPRING) SMEARS

A. These may be used to determine whether changes are present in females whose mothers took DES (Diethylstilbestrol) while the patient was in utero.

B. Care must be exercised in obtaining these smears to avoid any contamination from the cervix and vaginal pool area.

C. Materials Needed:

1. 5 cervical spatulas (Ayre scrapers) or tongue blades.

2. 5 glass slides (one end frosted). The slides are identified by writing the patient's name, FMP and last 4 digits of sponsor's social security number on the frosted end of the slides with a soft lead pencil. Each slide must also be labeled as follows: CX, V-ANT, V-R, V-L, and V-POST.

3. Speculum (without lubricant).

4. Commercial "Cytology Fixative" or a bottle of 95% ethyl alcohol.

5. Paper clips to be used when using the 95% ethyl alcohol fixation method. The vaginal smears will each have a paper clip placed over the frosted end to keep the slides apart in the bottle.

D. Technique:

1. Obtain the routine cervical scraping smear. Spread the material on the correct slide and fix immediately.

2. Using separate cervical spatulas or tongue blades, scrape one quadrant of the vaginal wall. When scraping, begin at the cervical-vaginal reflexion and scrape directly out towards the introitus. Spread the material on the correct slide and fix immediately. Continue with each vaginal quadrant.

3. If 95% ethyl alcohol is used for fixation, place the cervical slide in a separate bottle from the vaginal quadrant.

4. Include appropriate history on the cytology request form. Each slide should be labeled as to the site of origin of the smeared material. The final report will read for routine detection as well as for the presence of changes consistent with DES exposure.

BUCCAL SMEARS FOR CHROMOSOMAL SEX DETERMINATION

Buccal smears for chromosomal sex determinations are discouraged. The preferred technique for chromosomal information is chromosome analysis. Contact the Laboratory's mail out section for information.

BREAST SECRETION SMEAR

A. The preferred cytologic method for evaluating any palpable breast mass is a fine needle aspiration. However, smears of breast secretions may be utilized in the detection of breast cancers that involve ducts. This method is best utilized for a bloody discharge, or breast discharges in postmenopausal women. DO NOT MASSAGE OR SQUEEZE THE BREAST. Too vigorous manipulation may dislodge and spread malignant cells.

B. Materials Needed:

1. Glass slides (one end frosted). The slides are identified by writing the patient's name, FMP, and last 4 digits of sponsor's social security number on the frosted end of the slides with a soft lead pencil. Slides are further identified by indicating right or left breast.

2. Paper clips. These hold slides apart in fixative. Place a paper clip on the frosted end of each slide before obtaining a specimen.

3. Bottle of fixative (95% ethyl alcohol), available from Cytology.

NOTE: When 95% alcohol is not available, a commercial "cytology fixative" may be used, but is not the preferred fixative for breast specimens.

C. Technique:

1. Open bottle of fixative and have patient hold the bottle near the breast.

2. GENTLY express only the nipple and subareolar area of any secretions that may be lying in the collecting ducts. IF NO SECRETION APPEARS AT THE NIPPLE WITH THIS GENTLE COMPRESSION, DO NOT MANIPULATE FURTHER.

3. Allow a "pea" size drop of fluid to collect upon the nipple tip.

4. Immobilize the breast and, using the nipple, smear the material across a glass slide.

5. IMMEDIATELY, place the slide into the fixative. Time is of the essence here. Smearing the material across the slide and placing the slide in fixative should be accomplished in one motion.

6. Make as many smears as the amount of material allows.

NOTE: If specimens are obtained from both breasts, a separate non-GYN Cytology Examination Report should be used for the specimens from each breast. Slides made from both breasts must be labeled as to which breast (Right or Left).

ESOPHAGEAL/GASTRIC BRUSHINGS

A. The frosted end of each slide shall have the patient's last name, FMP, and last 4 digits of the sponsor's social security number written on one end of the slide with a soft lead pencil before the specimen is obtained.

B. A smear is made of the brushing on the frosted side of the pre-labeled slide. The slide must then be immediately fixed in a bottle of 95% ethyl alcohol (available from the cytology processing room 85). The brush should be rinsed in a small bottle of fixative solution (available from the cytology processing room 85). The slides and fixative solution should be forwarded immediately to the cytology lab for processing.

C. Subsequent pre-labeled slides shall have a paper clip placed over the end containing the identifying data to keep the slides separated in the fixative. The paper clips should be applied before the specimen is obtained.

D. It is recommended that samples from different sites be placed in separate bottles of fixative and labeled accordingly.

E. DUE TO RAPID CELLULAR DEGENERATION, RAPID FIXATION CANNOT BE OVER EMPHASIZED.

RESPIRATORY TRACT

I. SPUTUM SERIES:

A. When a pulmonary lesion is suspected, a sputum series should be examined. The SPUTUM SERIES consists of FRESH, EARLY MORNING SPECIMEN EACH DAY FOR THREE DAYS. A post-bronchoscopy sputum specimen may be included in the series. The Sputum Series increases detection of primary bronchogenic carcinoma from 45% (one specimen) to 75% (three specimens). DO NOT submit 24-hour specimens.

B. Materials Needed:
One wide mouth sputum collection assembly, or specimen collection cup with cover for each day (clean, dry, use fixative). The container shall be labeled with the patient's name, FMP, and the last 4 digits of the sponsor's social security number.

C. Technique I:
NOTE: If patient is unable to understand the English language, please contact the OOD desk (X3-5008) for an interpreter

1. Give the patient a clean specimen cup with cover the night before and instruct him not to use it until morning.

2. Instruct him to cough DEEPLY ("from the diaphragm") upon awakening and expectorate all sputum into the cup. Encourage the patient to expectorate deep SPUTUM not SALIVA.

3. The patient continues the deep coughing and expectorating until he has given five good deep coughs with expectoration.

4. The patient then returns the specimen to the nurse's station. It should then be brought directly to the Laboratory. If any delay is expected, the specimen should be refrigerated until it can be brought to the Laboratory.

5. Repeat the procedure each day for three days.
NOTE: For sputum collection on an outpatient basis, specimen containers with fixative solution should be used (available from cytology processing room 171210). The patient should be instructed to follow the first three steps above. The patient should bring the specimen to the Laboratory no later than 0900 on the day it was collected. The specimen should be accompanied with the appropriate chit.

D. Technique II - Post-Bronchoscopy (This is a most valuable specimen; more valuable than a single sputum)

1. Give the patient a clean specimen cup with cover before the bronchoscope is withdrawn. Be sure the container is labeled with the patient's name and sponsor's social security number. Also, label the container "POST-BRONCH SPUTUM."

2. Have the patient cough deeply and expectorate ALL sputum into the cup until an adequate specimen is obtained.

3. Collect the cup afterwards and take it with its chit immediately to the Laboratory. If any delay is expected, refrigerate until able to take to the Laboratory.

4. If this specimen is part of a SPUTUM SERIES, have patient continue series as outlined in Technique I.

II. BRONCHOSCOPIC SPECIMENS:

A. Specimens for cytologic examination augment routine bronchoscopy with biopsy, they do not replace biopsy. Specimens may be obtained during bronchoscopy by ASPIRATION of secretions, DIRECT BRUSHING of suspicious areas, and BRONCHIAL WASHING. As the findings at bronchoscopy are usually not predictable beforehand, the clinician must be prepared to obtain material by any means which may prove to be most desirable at the time of the examination.

B. Materials Needed:

1. One aspirator with short-inlet traps (Clerf, McKay, etc.).

2. 2 (or more) frosted slides. Writing the patient's name, FMP and the last 4 digits of the sponsor's social security number on the end of the slide with a soft lead pencil before the specimens are obtained identifies the slides.

3. 2 (or more) paper clips to hold the slides apart in the fixative. Place the paper clips on the end containing the identifying patient data before the specimens are collected.

4. One bottle of fixative (95% ethyl alcohol), available from Cytology.

5. 50 ml physiological solution and equipment for lavage.

C. Technique:

1. The surface of suspicious areas is:
(1) biopsied, (2) washed, and then (3) brushed. If insufficient secretions are present or a lesion is not visualized, rinsing the biopsy forceps in normal saline that has been used for the bronchial lavage will provide additional material for examination. FOR FULL DIAGNOSTIC VALUE, ALL MATERIAL SHOULD BE IDENTIFIED AS TO SITE OF ORIGIN.

2. Aspiration:

a. Aspirate secretions as encountered.

b. Label site of procurement and bronchial branches.

c. Set aspirations aside, properly labeled, until completion of the procedure.

3. Bronchial Washing:

a. Fill the bronchus to its carina with normal saline.

b. Aspirate the washing, label as to site of procurement, and set aside until completion of procedure.

4. Direct Smears:

a. Brush the surface of suspicious areas completely.

b. Withdraw the brush, quickly roll it on the frosted side of a labeled slide that is held over an open bottle of fixative and immediately place the slide into the fixative. Immediate fixation is essential to avoid air drying which occurs rapidly after the material is spread onto the slide.

c. If more than one site is brushed, the slides should be numbered #1, #2, and so forth.

d. Repeat in other suspicious areas using a fresh brush and another clean, numbered and identified slide.

e. Rinse the brush in a small container of fixative (available from cytology processing room 171210) or place the whole brush in a small container of fixative and submit immediately to Cytology for processing.

5. After Examination is completed:

a. Before bronchoscope is withdrawn, give the patient a clean, dry specimen container with cover for POST-BRONCHOSCOPY SPUTUM (See Sputum Technique II).

b. Immediately upon completion of the bronchoscopy, take the properly labeled FRESH SPECIMENS and SMEARS to the Laboratory with the completed request chits.

URINARY TRACT

NOTE: It is imperative that all cytologic specimens of the urinary tract be identified as to SITE of urinary tract from which the specimen is obtained and as to the METHOD by which the specimen is collected. It is requested that all urine specimens be submitted to the cytology processing room 85 before 1100, if possible.

A. VOIDED URINES:

1. It is preferred that all voided urines be obtained at Naval Medical Center Portsmouth. First voided morning specimens are the least desirable specimens because the cells have been exposed many hours to the cytotoxic effect of urine and should, therefore, be discarded.

2. A convenient method suggested for voided urine specimens is to have the patient void at home upon awakening (do not collect this voiding), and then report to the hospital two to three hours later where he/she may void the urine specimen to be used for cytologic examination. The patient should be instructed to drink a full glass of water after urinating at home (remember, the first morning specimen is not to be collected). The patient should be instructed to try to drink a full glass of water every half-hour after the first morning void until the time he/she arrives at the hospital two to three hours later to give the urine specimen.

3. All urine specimens should be fixed with equal volume of fixative (available from cytology processing room). Any specimen that cannot be taken to the Laboratory immediately should be refrigerated.

B. CATHETERIZED SPECIMENS:

1. Catheterized specimens must be labeled as such since any specimen collected by instrumentation produces cytologic artifacts which, if not considered, could lead to false positive malignant diagnosis. Catheterized specimens should be collected without lubricant then sent to Cytology immediately without fixative.

C. BLADDER WASHINGS:

1. Irrigation of the bladder with physiologic saline helps to exfoliate more transitional cells. All the saline injected into the bladder is withdrawn and submitted immediately to the Laboratory for processing.

D. URETHRAL AND PELVIC SPECIMENS:

1. When there is a question of a lesion in the upper urinary tract, urethral and pelvic urine specimens may be collected during cytoscopy. Great care should be exercised to prevent mix-up of specimens from left and right ureters and a bladder lesion. All specimens must be labeled to the exact source.

E. URETHRAL BRUSHES:

1. Urethral brush specimens and renal pelvis brush specimens: The brush should be quickly spread in a circular motion on a frosted end slide. No drying of the slide is permissible. The slide should be labeled and an open jar of 95% alcohol should be at hand before the brush is removed from the patient. Alternatively, a second person should be ready to spray the slide with commercial “Cytology Fixative" before any air drying can occur. The brush then should be washed or submitted in a small bottle of

fixative obtained from the cytology processing room 171210 and returned immediately for processing.

BODY CAVITY FLUIDS: PLEURAL, PERICARDIAL, PERITONEAL, AND JOINT

A. Pleural, pericardial, peritoneal, and joint fluids should be submitted FRESH AND UNFIXED. An easy means is to submit the specimen in the syringe used for the aspiration- **WITH THE NEEDLE REMOVED.**

B. Exfoliated cells from these sites deteriorate both in and out of the body. This deterioration is especially rapid in the presence of blood. Therefore, if possible, it is most important that these be obtained during normal working hours so that they may be processed immediately.

C. If an extreme emergency requires that a sample be obtained outside normal working hours, the specimen should be immediately brought to the Laboratory. The Laboratory staff should be instructed to place the specimen and accompanying chit in the refrigerator located in the cytology processing room immediately. There will be some cellular degeneration, but this is lessened by prompt refrigeration.

IMPORTANT NOTE: Samples submitted for fluid analysis that have multiple tests ordered should first be delivered to the Client Services specimen receiving desk for accessioning. Bypassing the specimen receiving area may result in CHCS orders being missed or not being accessioned in a timely manner. Once all CHCS orders have been accessioned, the Client Services staff will distribute the specimen to each section of the Laboratory requiring an aliquot of the specimen and will have a Tech from each section sign their initials and date in the green Fluids Logbook indicating receipt of specimen for testing. Specimens with Microbiology tests ordered (culture, fungal, AFB, etc.) will be delivered to Microbiology first to maintain sterility of the specimen prior to aliquoting in cases where a separate specimen was not sent specifically for Microbiology testing. Once Microbiology obtains the required specimen, the Client Services staff will deliver remaining specimen to other laboratory sections.

CEREBROSPINAL FLUID

NOTE: If a patient is unable to understand the English language, please contact the OOD desk (x3-5008) for an interpreter.

A. Any cerebrospinal fluid intended for cytologic examination should be for cytology use alone. Extra samples should be obtained for other testing.

B. Materials needed:

1. Spinal tap tray

2. Four sample tubes labeled #1-#4 with the patient's name, FMP, and sponsor's social security number.

C. Technique:

1. Perform spinal tap.

2. Place only a small amount of fluid in tube one. This is to clear the needle of blood.

3. Obtain cerebrospinal fluid in tubes #2-#4. One to two mL is generally the minimum amount required for processing; several mL may aid in diagnosis, especially if malignancy is suspected.

4. Send the tubes, with chit, to the Laboratory immediately, (cellular deterioration is rapid).

5. When CSF is sent on a patient and the physician doesn't specify what tests are to be run on each tube, the following protocol will be used:

a. Tubes 1 will go to Hematology for a Cell Count. Tube 4 will be sent to Cytology if cytologic studies have been requested.

b. Tube 2 will be sent to Microbiology.

c. Tube 3 will be sent to Chemistry.

NOTE: If less than 4 tubes are sent to the laboratory, Hematology will always process the last tube.

NOTE: Samples submitted for CSF fluid analysis that have multiple tests ordered should first be delivered to the Client Services specimen receiving desk for accessioning. Bypassing the specimen receiving area may result in CHCS orders being missed or not being accessioned in a timely manner. Once all CHCS orders have been accessioned, the Client Services staff will distribute the specimen to each section of the Laboratory requiring an aliquot of the specimen and will have a Tech from each section sign their initials and date in the green Fluids Logbook indicating receipt of specimen for testing.

NOTE: If possible, specimens should only be collected during normal working hours. Specimens should be brought immediately to the Laboratory Specimen Receiving window for processing. Samples will be refrigerated at 2-8°C if they cannot be processed immediately. If any questions arise regarding specimen handling, call the duty pathologist. Under no circumstances should CSF specimens be left in the window without the knowledge of a technician after normal working hours.

NOTE: All bacterial antigen assays on CSF specimens are required to have a bacterial culture performed at NMCP.

DIRECT SCRAPING SMEARS (MOUTH, PHARYNX, SKIN, etc.)

A. Materials needed:

1. Tongue depressor or scalpel blade.

2. Non-absorbent cotton swabs (cotton swabs must not be contaminated by epithelium from the examiner's or patient's skin).

3. Physiological solution.

4. Glass slides (one, end frosted). The slides are identified by writing the patient's name, sponsor's social security number on the frosted end of the slides with a soft lead pencil.

5. Bottle of fixative (95% ethyl alcohol), available from Cytology.

B. Technique:

NOTE: If patient is unable to understand the English language, please contact the OOD desk (X3-5008) for an interpreter.

1. If the lesion is moist:

a. Open the bottle of fixative.

b. Scrape the lesion with a tongue depressor, or scalpel blade.

c. Smear the material from the blade onto a glass slide that is held over the open bottle of fixative and immediately place the slide into the fixative.

2. If the lesion is dry or has a necrotic and inflammatory surface:

a. Open the bottle of fixative.

b. Gently moisten and remove the necrotic debris with a non-absorbent cotton swab that has been dipped in saline.

c. Discard the swab and debris.

d. Using a second non-absorbent cotton swab that has been moistened with saline, gently rub the margins of the lesion.

e. Quickly roll the swab on a glass slide that is held over the open bottle of fixative and immediately place the slide into the fixative.

BRONCHOALVEOLAR LAVAGE (BAL), BRONCHIAL WASHINGS, ASPIRATES, and EXUDATES (SINUS WASHINGS, etc.)

A. Materials Needed:

1. Physiologic solution.

B. Technique:

1. Irrigate with physiologic solution.

2. Collect all fluid.

3. Send specimen to Laboratory immediately.

NOTE: Cellular degeneration will occur rapidly. Attempts should be made to perform procedure during normal cytology working hours. If after hours specimen collection is a must, bring specimen directly to the Laboratory. Instruct laboratory personnel to place specimen and its chit in the refrigerator in the cytology processing (room 171210).

NOTE: Samples submitted for fluid analysis that have multiple tests ordered should first be delivered to the Client Services specimen receiving desk for accessioning. Bypassing the specimen receiving area may result in CHCS orders being missed or not being accessioned in a timely manner. Once all CHCS orders have been accessioned, the Client Services staff will distribute the specimen to each section of the Laboratory requiring an aliquot of specimen and will have a Tech from each section sign their initials and date in the green Fluids Logbook indicating receipt of specimen for testing. Specimens with Microbiology tests ordered (culture, fungal, AFB, etc.) will be delivered to Microbiology first to maintain sterility of the specimen prior to aliquoting in cases where a separate specimen was not sent specifically for Microbiology testing. Once Microbiology obtains the required specimen, the Client Services staff will deliver remaining specimen to other laboratory sections.

OTHER PROCEDURES

A. Telephone the Cytology Team during normal working hours at 953-1744/1745 for specific instructions before doing any procedure not described in this manual.

B. After hours, consult with duty pathologist.

FINE NEEDLE ASPIRATIONS

A. Fine needle aspiration (FNA) cytology, also known as aspiration biopsy cytology, may be extremely helpful in management of patients with both suspected and known malignancies. Fine needle aspiration consists of inserting a small gauge needle (#22 or smaller) through skin or mucous membranes into a mass which has been identified by palpation or radiological studies. Fine needle aspiration is most helpful in the confirmation of malignancy, either for primary diagnosis or confirmation of recurrence. However, many benign lesions (fibroadenoma, Warthin's tumor, etc.) can also be reliably diagnosed. Some of the situations in which this technique has been found most useful are listed below:

1. Cold thyroid nodules.
2. Enlarged salivary glands - diffuse or focal/ nodular.
3. Enlarged lymph nodes - most useful in detecting metastatic disease. Lymphomas can be suggested by fine needle aspiration, but usually require an open biopsy for confirmation and classification for initial diagnosis.
4. Breast masses greater than 0.5 cm in diameter.
5. Pulmonary nodules.
6. Abdominal masses.
7. Soft tissue masses of extremities.
8. Lytic bone lesions.
9. Evaluation of para-aortic nodes such as in patients with cervical cancer.
10. Prostatic lesions.

B. GUIDELINES:

1. The fine needle aspiration procedure is rapid and carries little risk to the patient. In our institution there have been no major complications. The minor complications associated with this procedure are minor hemorrhage and/or, rarely, local infection. Fine needle aspirations done on deep masses in the thorax or abdomen under radiological guidance may carry slightly more risk as determined by the specialist performing the procedure. For example, fine needle aspirates of the thorax may result in pneumothorax. In general, for subcutaneous masses that are palpable, the discomfort to the patient is usually no more than that associated with blood drawing, although this may vary with each individual patient. The physician performing the fine needle aspiration should complete an operation or procedure permit. The risk of "tumor seeding" is no longer considered clinically significant when small needles (21 gauge or smaller) are exclusively utilized.

2. Fine needle aspiration cytology is a relatively rapid tool and in emergency situations, when no special studies or tests are required, diagnosis can be made the same day the aspiration is performed. A preliminary diagnosis can often be rendered on selected slides within 30 minutes if clinically required. Complicated cases may take longer. In general, there will be a two day turn around period.

3. Preparation of the material (smearing of the slides and fixation) is critical. Improperly fixed slides are non-diagnostic. The nature of the lesion including appearance and quantity of the material obtained during aspiration may modify processing of the sample. Personnel from the anatomic pathology division should be present to properly process the aspirated specimen. Use of the appropriate fixative will be determined by the AP staff depending on the type of specimen collected. The staff cytopathologist is usually available to perform the procedure, or to assist a physician requesting technical

assistance. If the physician is familiar with the procedure for fine needle aspirations, or if the cytopathologist is unavailable, he/she may request that a cytotechnologist be present to help make the smears and process the material.

4. Fine needle aspirations are performed on alternating Monday and Wednesday of each week on an appointment basis. Appointments may be made in person at the check-in desk in the Laboratory or by calling 953-1623. The patient should be sent to the Laboratory on 1st Floor, North Mall, Bldg 2 with a completely filled out NON-GYN cytology chit between the hours of 0900-1530. Adequate clinical history and specific identification of the site to be sampled, including a diagram if appropriate, are essential. Questions may be directed to the Cytology Office (ext. 3-1744/1745). The cytopathologist may be reached via the same number, the Laboratory Administration Office (ext.3-1708), or by pager. Biopsies may be performed in the biopsy suite in the main laboratory, in the clinics, or on the ward if the patient is not easily transported.

5. Fine needle aspirations requiring guidance by radiological or ultrasound procedures should be scheduled through the radiology department. The requesting physician and the radiology department should then coordinate the procedure (time and place) with cytology personnel.

C. REPORTS:

1. Reports will include assessment of adequacy, descriptive diagnosis, and any recommendations for follow-up. If the specimen is sub-optimal or inadequate, or if cytologic findings are equivocal, a repeat aspiration may be recommended. If findings are suspicious for malignancy, but less than fully diagnostic, a repeat aspiration biopsy or an open biopsy may be recommended.

2. If sampling is adequate, a “negative” result provides clinically useful information (e.g., benign reactive lymph, benign colloid nodule of thyroid). A “false-negative” may result from technical problems, usually inadequate or incomplete sampling of a lesion or organ, or, uncommonly, interpretive error. If clinical findings, especially change or growth of a lesion, or radiographic findings contradict the FNA result, a repeat aspiration biopsy or an open biopsy must be pursued.

SPECIMEN SUBMISSION FOR INFLUENZA PCR TESTING

I. PURPOSE/PRINCIPLE:

A. The use of Polymerase Chain Reactions (PCR) permits identification of non-cultivatable or slow growing microorganisms or viruses. The basis for PCR diagnostic applications in microbiology is for the detection of infectious agents and for the discrimination of non-pathogenic strains by virtue of specific genes.

B. The purpose of this procedure is to provide instruction on the collection of specimen to be tested with the current Center for Disease Control (CDC) Influenza Real-Time PCR (rRTPCR).

II. SPECIMEN INFORMATION:

A. Specimen type:

1. Posterior-pharyngeal (throat) swabs
2. Nasal or naso-pharyngeal swabs
3. Nasal aspirate
4. Tracheal aspirate
5. Bronchoalveolar lavage.
6. Viral Cell culture: (training, proficiency assessment and reagent QC)
7. For H1N1 testing, respiratory wash specimens are acceptable.

B. Swab specimens are only to be collected on swabs with a synthetic tip (nylon, polyester or Dacron) and an aluminum or plastic shaft.

DO NOT COLLECT SPECIMENS USING COTTON TIP APPLICATORS WITH WOODEN SHAFT.

C. Swabs are placed into Viral Transport Media (VTM) or Universal Transport Medium (UTM) by the ward staff prior to shipping as described in CDC and WHO guidelines (http://www.who.int/csr/resources/publications/surveillance/Annex8/pdf or http://www.cdc.gov).

D. All specimens must be accompanied by the case report form. This form must completed and have all the clinical information meeting the case definition.

SPECIMEN SUBMISSION FOR VIRAL AND CELL CULTURES

I. PURPOSE/PRINCIPLE:

A. Although many viruses may be detected in the laboratory, we are none the less limited to the Detection of those viral agents, which may be grown in commercially prepared cell cultures. We are also limited to the identification of viruses, which physically alter the morphology of The host cells. This cytopathic effect or CPE is, however frequently characteristic for certain Viruses or groups of viruses. This characteristic CPE coupled with the varied pattern of Susceptibility of the host cells to specific viral agents make the isolation and presumptive Identification of many common viral agents relatively certain. We are able to presumptively Identify the following viruses:

1. Herpes Simplex Virus
2. Varicella-Zoster Virus
3. Cytomegalovirus
4. CPE other than that characteristic of the above viruses is reported as CPE noted. The Culture will be sent to a reference lab for identification.

II. SPECIMEN:

A. Specimens for viral isolation need to include specimen source, type of infection or virus Expected (if any). Specimens for viral or cell culture should be delivered to the laboratory Promptly, ideally within 2 – 4 hrs of sample collection and preferably within 1 day of collection.

B. METHODS OF COLLECTING SPECIMENS:

1. Throat Swabs*:
  a. Using a sterile cotton tip applicator, obtain a vigorous throat swab from both tonsillar pillars and from behind the uvula.
  b. Extract swab into VTM (Viral Transport Media). Send VTM to Virology immediately.

2. Throat Washings:
  a. Have patient gargle with 10ml of normal saline. Collect the wash in sterile container.
  b. Send to Virology immediately.

3. Vesicular fluid and skin scraping*:
  a. Vesicles are first washed gently with sterile saline and the fluids are aspirated with a 26 gauge needle attached to a tuberculin syringe. Fluid should be diluted immediately after collection with one ml of VTM to prevent clotting. Alternately, the cleansed vesicles may be collected onto a swab, which is then Placed into one ml of VTM. Cellular material from the base of the vesicle is Scraped with a scalpel blade and the cellular material is placed in VTM together With the vesicular fluid.
  b. Send VTM to Virology immediately.

4. Mucous Membranes*:
  a. Swab the area with sufficient vigor to remove superficial cells, but without significant trauma.
  b. Extract swab into VTM and send to Virology immediately.
  c. Eye Exudates:
    a. The palpebral conjunctiva is firmly rubbed with a sterile swab moistened with suitable diluents. When possible, the exudates (pus)

should be carried on the swab.

b. Place the swab in 2.5ml of VTM. Scraping from conjunctiva or cornea should be done by an ophthalmologist and should be placed in approximately one ml of VTM.

c. Send specimen to Virology immediately.

5. Sputum:

a. Collect in a sterile container and send to Virology immediately.

6. Feces:

a. Collect several grams in a sterile specimen cup and send to Virology immediately.

7. Rectal Swab*:

a. Rotate a cotton tip swab into the rectum until it is heavily coated with fecal material.

b. Extract swab into VTM and send to Virology immediately.

8. CSF:

a. A minimum volume of 3.0ml is recommended. Send to Virology immediately.

9. Urine:

a. Collect 20 to 30ml in a sterile container. First voided, clean catch urine is preferred.

b. Send specimen to Virology immediately.

10. Autopsy/Biopsy Material:

a. Place 2 – 4 grams of tissue into VTM.

b. Send to virology immediately.

11. Blood (CMV) only:

a. Collect 10ml of heparinized blood into a sterile syringe (0.1ml of 1: 1000 Na Heparin) or a dark green top Vacutainer tube.

b. Deliver to Virology immediately.

C. **A culturette may be used if VTM is not available.*

POINT OF CARE TESTING POLICIES AND PROCEDURES
(Refer to NAVMEDCENPTSVAINST 6510.1 Series)

Each Point of Care Testing Site (POCT) throughout NMCP maintains a Point of Care Testing binder. This binder includes Standard Operating Procedures (SOP) that pertains to the testing performed at each individual site as well as specific policies and guidelines that govern the regulations and Commission. For collection requirements, testing procedures, results reporting, MSDS and other matters that pertain to point of-care, please refer to site's POCT SOP and NAVMEDCENTPTSVAINST 6510 series. You may also contact the Point of Care Department at 953-1560/1653/7918/1617 or the POCT pager at 988-9636 or 988-9398.

NAVAL MEDICAL CENTER PORTSMOUTH
POINT OF CARE TESTING
NORMAL AND CRITICAL VALUES

TEST	NORMAL	*CRITICAL VALUE*
ACCU-CHEK INFORM II METER GLUCOSE	ADULT : 70-99 MG/DL 31 DAYS TO 18: 60-99 MG/DL	LESS THAN OR EQUAL TO 40 MG/DL, GREATER THAN OR EQUAL TO 400 MG/DL
	2 TO 30 DAYS: 50-80 MG/DL NEWBORN, 1 DAY : 4-60 MG/DL	LESS THAN OR EQUAL TO 40 MG/DL, GREATER THAN OR EQUAL TO 300 MG/DL
FECAL OCCULT BLOOD	NEGATIVE	POSITIVE
RAPID STREP	NEGATIVE	POSITIVE
HCG	NEGATIVE	UNKNOWN POSITIVE IN A PRE-OP PATIENT
PPM-PROVIDER PERFORMED MICROSCOPY	NO PARASITES OR FUNGAL ELEMENTS PRESENT, NORMAL URINE CAN CONTAIN SOME ELEMENTS WBC 0-5/hpf RBC 0-3/hpf EPITHELIAL CELLS 0-10/HPV MUCUS NONE TO TRACE ALL OTHER ELEMENTS: NONE	DETERMINED BY PROVIDERS
URINALYSIS	LEUKOCYTES: NEG NITRATES: NEG UROBILOGEN: 0.2-1.0 EU/DL PROTEIN NEG pH 5.0-7.0 BLOOD NEG SPECIFIC GRAVITY 1.010-1.030 KETONES NEG BILIRUBIN NEG GLUCOSE NEG	THE COMBINATION OF A KETONE RESULT GREATER THAN OR EQUAL TO 80MG/DL AND A GLUCOSE RESULT GREATER THAN OR EQUAL TO 500 MG/DL
ACTIVATED CLOTTING TIME	SYSTEMIC: 250-270 SEC TIGHT SYSTEMIC: 190-210 SEC HEMODIALYSIS: 150-180 SEC CARDIAC CATH: 80-160 SEC	CLINIC/PROCEDURE SPECIFIC

These reference ranges may not apply to all ages, genders, or patients on certain medications.

*The HEALTHCARE PROVIDER must be notified immediately. Documentation must be made in the medical record including the date, time and who made the notification.

NAVAL MEDICAL CENTER PORTSMOUTH
POINT OF CARE TESTING
NORMAL AND CRITICAL VALUES

TEST	NORMAL			*CRITICAL VALUE*
i-STAT	ARTERIAL	VENOUS	UNITS	
SODIUM	138-146	138-146	mmol/L	LESS THAN OR EQUAL TO 125, GREATER THAN OR EQUAL TO 160
POTASSIUM	3.5-4.9	3.5-4.9	mmol/L	LESS THAN OR EQUAL TO 2.8, GREATER THAN OR EQUAL TO 6.0
IONIZED Ca	1.12-1.32	1.12-1.32	mmol/L	LESS THAN OR EQUAL TO 0.86 GREATER THAN OR EQUAL TO 1.74
pH	7.31-7.41	7.25-7.50		LESS THAN 7.20
PCO2	41-51	35-50	mmHg	GREATER THAN 60
PO2	80-105	50-80	mmHg	LESS THAN 40
HEMATOCRIT	38-51	38-51	%	LESS THAN OR EQUAL TO 20%, GREATER THAN OR EQUAL TO 60%
BASE EXCESS	(-2) – (+3)	NA	mmol/L	NOT APPLICABLE
O2 SAT	95.0-98.0	NA	%	
HCO3	8-26	8-26	mg/dL	
TCO2	23-27	24-29	mmol/L	LESS THAN 10, GREATER THAN 40
CREATININE	0.6-1.3	0.6-1.3	mg/dL	GREATER THAN 5.0
GLUCOSE	70-105	70-105	mg/dL	LESS THAN OR EQUAL TO 40, GREATER THAN OR EQUAL TO 400
UREA NITROGEN	8-26	NA	mg/dL	GREATER THAN OR EQUAL TO 80
HEMOGLOBIN	12-17	12-17	g/dL	LESS THAN OR EQUAL TO 7.0, GREATER THAN OR EQUAL TO 20.0
ANION GAP	10-20	NA	mmol/L	NOT APPLICABLE
TROPONIN I	N/A			0.12 ng/ml
AVOX-Oxyhemoglobin (arterial):	92-100		%	** See Note

These reference ranges may not apply to all ages, genders, or patients on certain medications.
*The HEALTHCARE PROVIDER must be notified immediately. Documentation must be made in the medical record including the date, time and who made the notification.

** Oxyhemoglobin critical values are determined on a case by case basis by the cardiologist performing the catheterization.

RESPIRATORY THERAPY POLICIES AND PROCEDURES
(Refer to 23.xxx Procedural Series)

The Respiratory Therapy department operates under the Pulmonary clinic and under the Directorate for Medical Services. However, this separate entity operates under the College of American Pathologists (CAP) number for the laboratory, and thus enables purview of the Point of Care Testing (POCT) Division and under the instruction of the POCT Section Director in the main Laboratory. The Respiratory Therapy department maintains a policy binder that includes Standard Operating Procedures (SOP) for testing performed at each individual site (Intensive Care Unit Blood Gas Lab and Neonatal Intensive Care Unit Blood Gas Lab) as well as specific policies and guidelines that govern CAP regulation and the Joint Commission. For collection requirements, testing procedures, results reporting, MSDS and other matters that pertain to the Respiratory Therapy department, please refer to site's 23.xxx series SOP. You may also contact the Respiratory Department Division Head at 953-2103/2107 or the Respiratory pager at 988-9557.

Appendix A

Use the Hyperlink below to:

GUIDELINES AND REGULATIONS FOR THE BLOOD BANK

(https://webapps.mar.med.navy.mil/userdata/nmcpadmin/pdfs/6530_4A.pdf

APPENDIX B

VACUETTE® Tube Conversion Guide

Venous Blood Collection Tubes

greiner bio-one

VACUETTE® Cap Type/Color	Additive	Number of Inversions	Testing Disciplines	Previous Cap Type/Color
	No-Additive	5-10	Discard tube Transport/Storage Immunohematology Viral Markers	
	Sodium Citrate* 3.2% (0.109 M) 3.8% (0.129 M)	4	Coagulation	
	Clot Activator**	5-10	Chemistry Immunochemistry Immunohematology Viral Markers	
	Clot Activator w/Gel**	5-10	Chemistry Immunochemistry TDMs	
	Lithium Heparin w/Gel	5-10	Chemistry Immunochemistry	
	Sodium Heparin Lithium Heparin	5-10	Chemistry Immunochemistry	
	K_2 EDTA K_3 EDTA	8-10	Hematology Immunohematology Molecular Diagnostics Viral Markers	
	K_2 EDTA Gel	8-10	Molecular Diagnostics	
	K_2EDTA	8-10	Hematology Immunohematology	
	Potassium Oxalate Sodium Fluoride	5-10	Glycolytic Inhibitor Glucose and Lactate	
	Sodium Heparin	5-10	Trace Elements	

RING INDICATOR

*If a winged blood collection set is used AND the coagulation specimen is drawn first, a diacard tube is recommended to be drawn prior to this tube to ensure the proper anticoagulant-to-blood ratio.

**For complete clotting, 30 minutes minimum clotting time is required. Incomplete or delayed mixing may result in delayed clotting.

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Greiner Bio-One
888.286.3883 Phone | 800.726.0052 Fax
office@us.gbo.com | www.us.gbo.com

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